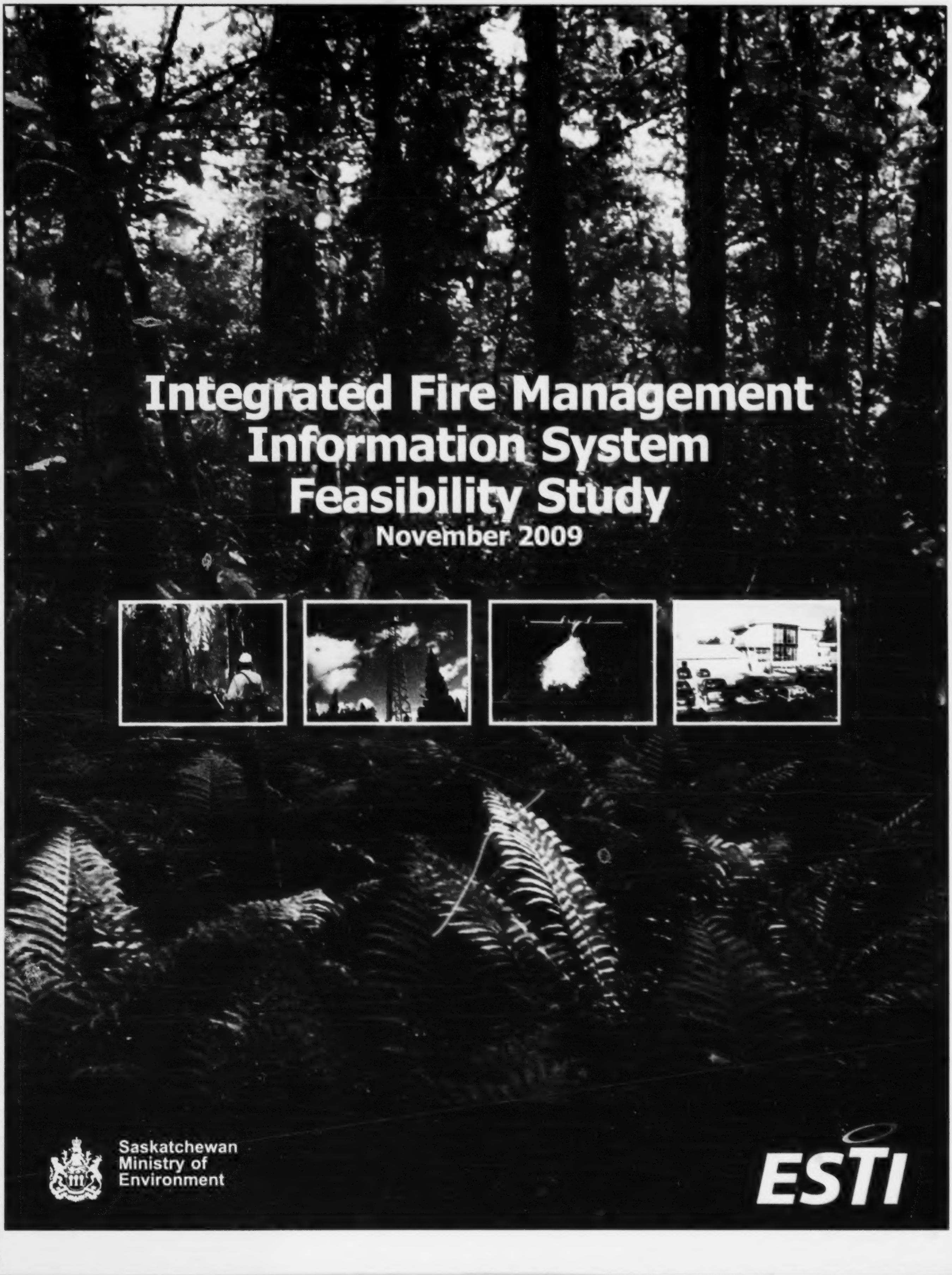

Integrated Fire Management Information System Feasibility Study

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Saskatchewan
Ministry of
Environment

ESTI

Table of Contents

1. Executive Summary 2
2. Feasibility Study Intent and Background 6
3. Stakeholders 9
4. Current Situation Analysis 17
5. Challenges facing Fire Management and Forest Protection Branch 48
6. Best Practices Revealed 52
7. Recommendations and Options 59

Table of Appendices

Appendix A: Key Stakeholder Consultations 86
Appendix B: Extra-Jurisdictional Research 89
Appendix C: Phased Approach Diagrams 90
Appendix D: Customer Comments 93
Appendix E: External and Associated Agency and Industry Survey 94
Appendix F: Glossary of Terms and Acronyms used by the FMFPB 104

1. Executive Summary

Situation Analysis

The Ministry of Environment's Fire Management and Forest Protection Branch (FMFPB) plays an important role in protecting people, communities, forests and numerous values throughout Saskatchewan. To carry out this role, a wide variety of skills are needed to anticipate, predict and manage fire and fire suppression efforts as well as to support these operational efforts. To supplement these skills, many complex and specialized information management systems are required to track operational data, track resources, model fire growth, manage weather data and much more.

The FMFPB is faced with a number of unique challenges while providing services. Operating in a geographically large and diverse space, infrastructure and resource availability are two primary challenges which directly affect the delivery and operation of information management related systems and processes.

- The Internet is not available via standard high speed lines at many locations served by FMFPB; satellite communications are the only way to provide data and voice connectivity to these areas. The ITO provides the infrastructure support to FMFPB but does not currently maintain the expertise to match this infrastructure. This results in frustration for both groups.
- Employees with the required skills are not available at all fire centers, fire bases or sub-bases; both basic literacy and computer literacy can provide substantial challenges in these locations.

Currently a wide variety of systems exist at FMFPB which attempt to fulfill the information management roles that must exist to satisfy accountability, operational and safety requirements. These systems vary widely in capacity, robustness and technology and can be placed into three categories: "broken", "in need of repair" and "stable" with most systems falling into one of the first two categories. Integration between systems is minimal and in most cases, non-existent which further hinders the ability to support the emergency services provided by FMFPB and can compound the infrastructure and skill challenges already facing the program.

Status Quo

If the systems at FMFPB remain as they are today, the increasing demands on the program will go unfulfilled. There are three significant expectations that are put onto the Fire Program.

1. FMFPB is expected to educate communities, individuals and organizations in the areas of fire prevention and fire management. This includes preparedness as well as appropriate response planning. Successful execution of the FireSmart program is one such expectation. The current information systems do not adequately store or manage information in a fashion that is helpful for measuring these expectations.

2. As the name of the branch indicates, FMFPB is expected to protect the forest and the values within it and to manage fires that threaten these values. As resources become more valuable in

Saskatchewan, government and industry presence in the north is increasing and putting more pressure on the Fire Program. High priority values are increasing (communities, exploration camps and structures) which requires a higher level of planning, readiness, preparedness and response. Many of the current systems cannot support these increasing pressures or expectations.

3. Increased requirements for **accountability** and **transparency** require a sophisticated collection of systems and services. These requirements demand accurate tracking of historical data as well as predictability functions based on various inputs. The Fire Program is under constant pressure to report on past costs, past activities, predict up-coming costs and up-coming activities. The pressures are putting unrealistic expectations on the existing systems.

The current systems cannot provide what is currently being required from the Fire Program. Significant manual work is required to deliver results and in many cases, the requested information is put off for months until individuals can step in and assist in the off-season. It is easy to see how increasing demands and future demands will go unfilled with the existing information systems.

Available Options and Recommendations

A number of options and recommendations have been outlined in this document which would provide a direct impact on FMFPB's ability to deliver what is expected of them and, even more importantly, will enable the Fire Program to meet increased expectations over the coming years.

Associated fire programs in other jurisdictions have been building their information systems for a number of years in anticipation of the demands that are presently upon them. In addition to protecting the forest and renewable natural resources, Alberta has a vast number of industrial resources in the Oil Sector to protect throughout the province. BC has a large resident human population across their forested lands as well as an active forestry and mining sector throughout the province. Ontario has large forestry, resource and tourism activities throughout the province. Each jurisdiction has responded to these pressures by implementing integrated systems allowing them to respond more quickly and more efficiently to emergencies and to allow for increased preparedness. Saskatchewan is now facing similar pressures – forestry, expanding resource exploration, tourism, growing northern communities – all put pressure on the Fire Programs ability to respond to emergencies.

1. Developing a new and modern Integrated Fire Management Information System, replacing the current Daily Forest Fire Information System, will create a central point for existing and future systems to connect with. A core fire system with centrally stored contact and organization data, which is available to the geographically diverse staff of the Fire Branch, will increase the flow and availability of information and in turn enable the delivery of information to government, clients, partners and affiliated agencies of the Fire Program. Many unrealized opportunities for partnerships and for new or enhanced client relationships exist due to FMFPB's aged and disparate systems.

2. Expansion of technical and strategic resources within the Fire Program will significantly expand the ability of the program to deliver on expectations. Currently, there are no defined roles for technical and information management strategy or support within the Fire Program. The current information technology service provider for these IT and IM roles is the Information

Technology Office of Saskatchewan (ITO) which, as an organization, is not currently set up to support a specialized emergency program like FMFPB. The skill sets to provide support for mobile and fixed satellite communications, to provide specific technology strategy to support aircraft tracking or to support large scale GIS data gathering and management has limited, if any, current capacity to exist within ITO's knowledge base.

3. Build on the available geospatial systems to support the Fire Program which is highly dependent on this type of data. Currently, the Fire Program has access to a mature GIS based flight following system. This system is currently under utilized but is highly capable of providing a platform for delivering a wide range of spatial information including inventory locations, weather, lightening information, crew locations and nearly all FMFPB related information that requires a spatial context.

Approach

A number of specific activities and actions can be taken to satisfy these recommendations. The activities can be placed into three (3) phases enabling a managed approach to renewing and integrating the FMFBP Information Management systems. These phases are clearly stated in section 7 of this document.

First steps are identified which are reasonable and practical for moving the Fire Program's information management systems ahead. These steps will also aid FMFPB in aligning itself with the Results-Based Regulatory framework

As indicated above, targeting the core of the information management systems at FMFPB makes an ideal first step. This addresses the largest number of issues identified within this study:

1. Accurate recording of operational fire related information.
2. Accurate, efficient and timely recording of data related to the costs of fighting fire and preparedness.
3. Access to information for FMFPB staff.
4. Access to information for FMFPB partners, clients and associated agencies.
5. Delivery of summarized and detailed statistics.

This step also satisfies recommendation point number 2, under section 10.1.1 in the Clifton Report entitled *Towards a Results-Based Regulatory System*. By implementing a new core Fire System, the fundamental component for efficient and effective data sharing between MOE business units, from the FMFPB perspective, is met.

Organizationally, adding or identifying a small staff compliment that can provide the technical direction needed to deliver the fire program is an excellent initial step. In reviewing other jurisdictions where significant progress has been made regarding information management, key roles were identified:

1. Architect or technology leads were present providing direction in regards to standards, integration, and with problem analysis and solution development.
2. Support staff familiar with the specialized offerings and requirements of the fire program, were present and available to the program.

This step also satisfies recommendation point number 5, under section 10.1.1 in the Clifton Report entitled *Towards a Results-Based Regulatory System*. By identifying key positions that must be maintained within FMFPB, the capability to develop and maintain FMFPB applications will be re-established within the Fire Program.

When and Why

Addressing the need for a better fire information system is important for many reasons. Issues that indicate a need for immediate action include the following.

1. Fire investigations are becoming a larger component of the fire program. Doing this type of cost recovery based activity requires legal proceeding and as such, requires accurate and available information. Having statistical information, cost data and supporting documentation (photos, GIS, flight activity) available for legal proceedings, is vital to this initiative's success.

2. The rising costs of fuel, staff and equipment can make significant differences in the cost of delivering the Fire Program. For example, in a high fire season, changes in fuel prices can result in **millions** of dollars of unanticipated costs. Having inefficient and non-integrated systems continue to inhibit the ability of administrators to properly predict effort or costs. Saskatchewan is experiencing cost escalations with consumables like fuel, like never before.

3. Being able to react quickly to a situation can save lives, costs and effort. For example, the implementation of a flight following system has enabled the program to divert aircraft to rapidly developing situations faster than ever before. Continuing the push to integrate and modernize systems will only increase the benefits of this trend. Providing the supporting cast to manage and maintain these systems is critical to their success.

2. Feasibility Study Intent and Background

Since inception in 1905 the Government of Saskatchewan has been protecting Saskatchewan's forests and grasslands by employing unique and creative methods, many of them as unique as the values they protect. Although this type of protection was being done earlier than the province's inception, the formal beginning was in the creation of *The Prairie Fires Act, 1906* which used a number of legislative guidelines and rules to achieve two main objectives: primarily to emphasize and enforce fire prevention and secondly support fire suppression activities.

Fire prevention activities spoke to many groups including the agriculture community where fines were levied on those who didn't take the proper measures in preventing fires while threshing. The rail industry was held accountable for fires that started from train traffic or associated rail line activities. Campers and camp related activities common to the day, including branding and mineral exploration, were also included as proper fire management was encouraged to avoid forest fringe area fires. As the idea of fire management matured, the prevention message became more refined and more targeted, but the unique methods used for fire suppression advanced significantly. In 1947, the Saskatchewan Forest Service began using "smoke jumpers" who would parachute from aircraft into fire areas to act as the primary fire response crews to suppress fires. Due to the large amount of area that needed to be covered, this became an efficient way to get to a fire as quickly as possible. This approach to fire fighting was so effective it was practiced until 1967 when the road system and the availability of helicopters became great enough that the practice was no longer required. Continued maturity in the fire suppression realm introduced the use of water bombers, fire retardant, foam, sophisticated communications equipment, heavy equipment and helicopters for water delivery and for crew deployment.

Individuals, communities, businesses, exploration camps, hunting and fishing camps, forestry companies and commercial timber make up the diverse set of values that have constituted the wildfire management program since its beginning. The values stay the same but the methods and strategies used to protect them have continued to change over time. Fax machines, satellite phones, global positioning systems, computer networks, sophisticated radio networks and satellite connected remote weather stations are just a few tools used to fight fires in modern day Saskatchewan. Even though these tools have allowed the program to respond more quickly and more efficiently, these programs require maintenance and ongoing attention just the same as the methods and tools used in the early days of the fire program.

It is for this reason that these systems, specifically the information management based tools, are being reviewed to determine their state of maturity and usefulness to ensure that the program works to its utmost potential. In review of the Fire Management and Forest Protection Branch's (FMFPB) information systems and associated processes, four (4) objectives have served as an overarching focus:

Objective 1: Information System Assessments

It is the responsibility of FMFPB to watch over and protect the many assets and values within its purview. To do this, a number of systems have been developed and purchased over the years to ensure that the required information is produced, gathered and stored in support of fire management and operations. With a strategic move some years ago to emphasize preparedness, the reliance on these tools for decision making purposes has increased significantly.

After considerable interviews and assessments, it has been determined that the Daily Forest Fire Information System requires a rebuild and expansion allowing it to fulfill a core functionality and integration role for FMFPB; a number of systems require review, technology upgrades and enhancements; an over-arching approach to integration is required following guidelines and initiatives readily available from the Business Intelligence community.

Objective 2: Information Interconnectivity

In an organization like FMFPB where most activities support one sole objective, the information used to support this objective interrelates together even if the connections are not immediately obvious. For example, time spent on a fire by an individual connects to payroll, training, cost recovery activities, fire and statistical reporting, dispatch and resource tracking. By connecting the points of information, efficiencies can be uncovered and strategic planning can occur.

After considerable process review and analysis, it has been determined that many of the processes within the FMFPB are mature and work well, but require tuning and inclusion within an automated environment to increase efficiency, reduce redundancy and eliminate transcription errors throughout.

Objective 3: Identification of Best Practices

Each region of Canada has some level of fire protection program in place with similar goals and mandates to Saskatchewan's Fire Management and Forest Protection Branch. These may look different depending on geography, political or organizational choices, but the goal remains the same. On a more specific level, most cities and municipalities have similar needs for fire protection as well. On a broader scale, most countries in the world have similar programs to protect people and assets that may become threatened by wildfire. This provides a large community to review in terms of best practices related to how fire management agencies use information management and information systems.

After visits to Ontario, British Columbia and Alberta fire programs as well as visits to Prince Albert National Park administrative offices and Saskatoon Fire Services administrative offices, a set of tools and lessons learned have been gathered which will provide a broad and comprehensive basis of defined best practices as this project moves ahead.

Objective 4: Recommendations

There are a number of obvious factors to consider while analyzing the findings and developing recommendations for this feasibility study. There are also a number of less obvious factors which are specific to government operations and the Saskatchewan wildland fire program. They are:

- The unique geography that exists in the regions of Saskatchewan.
- The population and demographics that are served by FMFPB protective services.
- Population and demographics from which FMFPB draws staff, support and resources.
- Communications and resource availability in the more remote areas where operations occur.

- The technical environment that the Ministry of Environment operates in and the Ministry's relationship with the Information Technology Office, its technology service provider.
- Legal requirements and partnership commitments to work with external agencies for resource and information sharing.
- Recent directives toward a results driven regulatory model which emphasizes government and public reporting on environmental conditions and sustainability.

By satisfying the first three (3) objectives, by analyzing the findings and by considering all the factors outlined above, a number of recommendations are being set forth with a variety of benefits.

- Increased efficiency in collecting, processing, storing and accessing vital business information;
- Increased speed and ease of access to timely and accurate information about particular fires;
- Ability to carry out "real time" calculation of projected costs while fires are in progress followed by quick verification and validation of actual fire costs;
- Significant reduction in redundancy of information;
- Opportunity to integrate information from all areas and sources of the fire program into an effective fire "business intelligence" tool for streamlined and comprehensive decision making and corporate program reporting.

3. Stakeholders

There are a large number of groups who will be affected by the activities and changes which may ensue as a direct result of the recommendations in this report. Each group should see an increase in service and reporting from these activities.

3.1. Central and Northern Residents

The primary goal for FMFPB is to directly protect residents who reside on the Crown Lands and in Provincial Forests that are protected and managed by the Ministry of Environment. This is a diverse group located throughout central and northern portions of the province. Support to these communities and to rural municipalities throughout the province is available as needed directly through emergency response via fire suppression activities. Indirectly, support can come in different ways:

- Training is provided to these stakeholders using the *FireSmart* program which helps to reduce the risk of unwanted fires and equips communities to react appropriately when there is an event.
- Direct fire line training, provided by FMFPB, equips certain communities' residents with the skills to be Emergency Fire Fighters (EFF) when the need arises. This also provides employment opportunities for some community residents.
- Promotion of community based events which highlights the risks of fires and the results of unwanted wildfire.
- Employment of community residents in the seasonal operation of the Fire Program.

Included in this primary group are communities as far south as Cypress Hills and as far north as Uranium City; a distance of 1200 KM's (as the crow flies). Thousands of cabin owners, aboriginal land residents, industrial operations including exploration camps, and campers make up the vast number of permanent and seasonal residents that occupy the 652,000 square kilometers that make up Saskatchewan.

3.2. General Public

Activities and events that involved FMFPB can have a wide ranging effect on the general public. Information gathered by FMFPB can provide value to cabin owners who are worried about fires near to their properties. Burnt areas are of particular interest to mushroom harvesters in the year following a burn. This information is within FMFPB control and can be made readily available to the general public through existing information portals.

3.3. Industry

A long tradition of forestry and outfitting in Saskatchewan has been joined by an increasing demand for exploration and mining. Much of this activity is happening in the central and northern portions of the province. Northern exploration camps; small and large mine sites run by corporations like Cameco and Areva; forestry operations and mills run by Domtar, Mistic

Management, Weyerhaeuser, L&M, Tolko and smaller Timber Supply license holders ; outfitters such as those located in La Ronge and Wollaston Lake, all make up the diverse industry that uses Saskatchewan's northern resources.

Not only do these groups expect FMFPB's assistance in fire threat situations, they also look to FMFPB for education and training in helping prevent fires, and they also offer their assistance in fire fighting situations when able and if appropriately trained.

3.4. Ministry of Environment – Corporate Services Division, Fire Management and Forest Protection Branch

FMFPB maintains six business streams which are responsible for the operations within the branch. Each of these streams satisfies a portion of the program needed to operate wildfire prediction, attack and suppression.

Aviation Operation is separated into two sections, Northern Air Operations and Support, and Contract Aircraft and Safety.

Northern Air Operations (NAO) manages and administrates the tanker based (water, foam and fire retardant bomber aircraft) activities of the fire branch. 20 aircraft are owned by the Government of Saskatchewan and operated by NAO. NAO is regulated at a provincial level as well as a national level (Federal Government – Ministry of Transport) and as such has to deal with a number of complicated processes regarding aircraft safety, management and operation. This extends from the physical aircraft to the pilots and engineers.

Support, Contract Aircraft and Safety provides the framework and function to manage contract rotary and fixed wing aircraft. These aircraft are used for detection and patrols, initial attack, transport and fire suppression activities throughout the fire season.

Some NAO fast facts:

- NAO is a dual regulated group with legal compliance required under the Federal Ministry of Transportation (when they are in the air) and under the Saskatchewan Provincial Government (when they are on the ground).
- To support their fleet of aircraft, a full compliment of aircraft maintenance engineers and aviation parts is required to be sustained in La Ronge all year round.

Logistics currently manages the inventory and transport of inventory throughout the fire regions. With the significant amount of fire inventory spread across the province, there is a challenge to track and maintain stock as well as to document those items lost to fire during suppression efforts. Items as small as camp gear and as large as fire trucks and trailers make up the inventory under management. Additionally, Radio Technical Services falls under the logistics banner as well, providing radio network support for voice and data communications, weather station support, mobile satellite services and general communications and radio technical support. Some logistics fast facts:

- Approximately $10,000,000 worth of fire suppression inventory is stored at equipment caches across Saskatchewan. 60,000 items can be identified within this inventory.
- Over 1000 handheld King Radios are maintained and kept operational by the Radio Technical Services group to enable wildfire management operations in the field.
- RTS supports 60+ remote weather stations that provide hourly weather information to FMFPB. Many are only reachable via helicopter or all terrain vehicles.

Science and Planning provides a number of services to the fire program and also acts as a research and development group to FMFPB. Weather and weather forecasting, fire weather behavior including weather indices, geospatial and mapping services, operation of the Spatial Fire Management System for preparedness planning, scientific modeling, policy management and maintenance and recovery of fire suppression costs through legislation/litigation, make up the diverse services within this business stream. As such, a complicated array of systems is required to maintain these operations. Science and Planning fast facts:

- During the fire season, weather data is automatically gathered hourly via phone, radio and satellite communications from all 75+ weather stations.
- Weather briefings are prepared and delivered twice a day for operations staff across all three FMFPB regions.
- Three new weather stations were added to the weather network in 2009.

Administration and *Quality Control* provides a capacity to track costs within the fire program and act as an administrative liaison to the Ministry of Environment and other groups including Northern Support Services and the Public Service Commission. Providing assessments of fire center operations and fire base operations within the branch, as well as providing a conduit to ITO for service requests, falls under the Quality Control and Administration mandate. Quality Control and Administration fast fact:

- Capital projects managed under Quality Control and Administration included the planning and construction of 4 new observation towers, construction of a bunkhouse and a number of fire base upgrades in 2009.
- A new observation tower can cost $250,000 to construct.

Training, Education, Prevention and Safety Section is tasked with creating training plans, curriculum and delivering the appropriate training to fire line staff, fire command staff and fire program administrators as required. With a compressed spring schedule for fire line and operational training, it is a difficult task to ensure all needs are met. Tracking fire fighter experience and the training received plays an important role for future job allocations and resource sharing exercises between national and international jurisdictions.

- In 2008, FMFPB employed 1068 Emergency Fire Personnel, all of whom require fire line and safety training each year to stay certified.

Fire Management Section is the operational stream which manages and executes wildfire detection and preparedness, initial attack and fire suppression activities of the FMFPB.

Managing a large number of seasonal staff to support a seasonal fire program makes for a varied and dynamic operation. Fire Management relies on all of the FMFPB business streams to support their efforts including weather, SFMS, science and GIS to help with preparedness, air tankers to support suppression, administration to ensure cost tracking and reporting are provided, training to ensure certified staff are active on the fire line and logistics to ensure equipment is available as required.

- On average, 542 fires a year are managed by FMFPB. In a severe year, this number can climb to between 800 and 1300 fires.
- A single large fire can cost $1,000,000 a day to control and suppress.

3.5. Ministry of Environment – Forest Service Branch

The Forest Service Branch, among other activities, provides custodial services for the Province's forests. As such, they provide information on what is growing in the forest and set timber values for the different regions of the forest, manage species and reforestation efforts, and also plan and maintain forest plantations. Timber values information provided by FSB assists FMFPB when planning forest fighting efforts to ensure the higher valued timber is protected first when priorities need to be set. Knowing the species and "fuel types" for a fire ensure the correct strategy is being used for initial attack and sustained fire fighting.

Forest Services Branch relies on vital management information from FMFPB regarding burn locations and details of forest fires that assists them in performing assessments and evaluations for determining sustainability of harvest in Forest Management Areas (FMA) and effect on annual allowable cut (AAC) and reforestation or plantation efforts which may occur following a fire.

3.6. Ministry of Environment – Lands Branch

The Lands Branch maintains a significant amount of information that corresponds and supplements the FMFPB Values At Risk database. This information is important for prioritizing fire fighting operations as well as planning Fire Management strategy.

Information in this database includes property locations (cabins, outfitting camps, mineral extraction operations) and owner contact information, infrastructure item locations and supplementary information including the type of structure and who it belongs to (ie: SaskTel). Being able to place these items spatially within the context of a fire allows FMFPB to determine their approach to fighting a fire and managing the fire growth. In a situation where multiple fires are burning and limited resources are available, access to this information is vital to determine where resources need to be most effectively allocated.

3.7. Ministry of Tourism, Parks, Culture and Sport – Parks Service Branch

The Parks Service Branch is responsible for operating Saskatchewan Provincial Parks and the assets within them. This not only includes timber and environmental assets, but also commercial and recreational assets (ex: campgrounds, service centers) park patrons (ex: campers and day users) and Parks staff. The Parks Branch also conducts "prescribed burns" in an attempt to encourage natural rejuvenation of the forest cover in the parklands after a fire. Additionally, Parks Branch Staff are also asked to assist FMFPB to fight parkland fires or assist with administrative support during high fire seasons.

3.8. Ministry of Environment – Finance and Administration Branch, Financial and Property Management Section, Northern Support Services

NSS provides administrative support for managing various contracts in the daily FMFPB operations. These contracts include aviation contracts for short and long term fixed wing and helicopter services, capital project contracts for building structures and support infrastructure as well as heavy equipment contracts sourced through the FMFPB logistics department or in the field. NSS also provides invoice processing services for payment of these contracts as well as administrating purchase orders, BMO purchase card process based costs, CVA costs, S4 expenses and emergency fire personnel payment processing.

3.9. Ministry of Environment – Conservation Division, Compliance and Field Services Branch, Enforcement and Investigations Section

This Section has a number of connections to the fire program. Compliance and Field Services Branch shared the development of the CDMS system with the FMFPB Education and Prevention group and currently uses the application to track and manage training for Conservation Officers. Any enhancements or strategic changes to this business solution would have an impact on the Compliance Branch. The Enforcement and Investigations Section shares a staff member with the FMFPB Science and Planning group to investigate "man caused" fire incidents and support litigation and cost recovery activities.

Additionally, the Radio Technical Services group provides some additional communications services to the Compliance and Field Services Branch in the form of patrol vehicle radio support and other complex communications.

3.10. Ministry of Environment – Communications Branch

The Communications Branch provides an outward facing function from FMFPB to the public in disseminating information, either statistical or real-time information on fire activity in the province. This can be in the form or public web page updates, recorded phone updates with active fire and weather information or direct phone based requests from the public or the media. The state of FMFPB's information systems and networks play directly into the quality of service that can be delivered by the Communications Branch staff.

3.11. Public Service Commission

The Public Service Commission interacts directly with FMFPB in providing human resource management services. This includes the many processes around job postings and staffing as well as certain staff training, payroll services and providing direction with occupational health and safety.

3.12. Ministry of Corrections, Public Safety and Policing – Protection and Emergency Services / SaskEMO / Sask911

As FMFPB is directly related to the provision of emergency services when a wildfire threatens human life, there is a direct relationship between the Ministry of Environment and the Ministry of Corrections, Public Safety and Policing. Clear and accurate information is required from FMFPB to emergency coordination personnel at CPSP to ensure that these efforts are done in a timely and efficient manner. For example, CPSP will use smoke reports, weather reports and the daily FMFPB situation report to provide emergency coordination efforts by communicating the information to with the Ministry of Health and the Ministry of Social Services. In doing this, evacuations can be organized, warnings can be issued and media alerts can be broadcast as needed.

3.13. Ministry of Highways

Wildfire activity can directly affect ground transportation in the province and will often result in highway and road closures. It is important for the Ministry of Highways to be aware of fire activity so they can respond as required to manage road closures. Additionally there must be close communications between these ministries as any non-fire related road closures or detours can seriously affect how FMFPB is able to respond to a wildfire.

3.14. Information Technology Office

Saskatchewan's Information Technology Office is the Ministry of Environments official technology service provider supplying the technical infrastructure and associated services to support information technologies used by the Ministry. FMFPB presents a special case for the ITO because administrative and operational systems, supporting infrastructure, satellite systems and remote application needs are oriented more toward emergency services (IE. 24/7 response during fire season) and less toward a static office configuration (ie: Monday to Friday, 9 to 5).

The relationship between the ITO and the FMFPB is a key one to determine how efficiently and effectively FMFPB can provide its services, disseminate its information and administrate its program.

3.15. Government of Alberta – Sustainable Resource Development, Forestry Division

Saskatchewan shares a border with Alberta and as such, the Alberta and Saskatchewan fire programs have an agreement which provides the best possible protection for the area close to this border. A quick strike agreement exists which covers a 20KM area on either side of the Alberta / Saskatchewan border. This agreement allows either province to go into the other province, within the 20km range, to perform initial attack on a fire. A cost recovery process exists within this agreement.

Additionally, as with other fire agencies, FMFPB and the Alberta provincial wildfire program work collaboratively with regard to fire science and specific wildfire training initiatives.

3.16. Government of Manitoba – Manitoba Conservation, Fire Program

Saskatchewan also shares a border with Manitoba and as such, the Manitoba and Saskatchewan fire programs have an agreement which provides the best possible protection for the area close to this border. A quick strike agreement exists which covers a 20KM area on either side of the Manitoba / Saskatchewan border. This agreement allows either province to go into the other province, within the 20km range, to perform initial attack on a fire. A cost recovery process exists within this agreement.

Additionally, as with other fire agencies, FMFPB and the Manitoba provincial wildfire program work collaboratively with regard to fire science and specific wildfire training initiatives.

3.17. Government of North West Territories – Environment and Natural Resources, Fire Program

Saskatchewan also shares a border with NWT and as such, the NWT and Saskatchewan fire programs have an agreement which provides the best possible protection for the area close to this border. A quick strike agreement exists which covers a 20KM area on either side of the NWT / Saskatchewan border. This agreement allows either group, within the 20km range, to perform initial attack on a fire. A cost recovery process exists within this agreement.

Additionally, as with other fire agencies, FMFPB and the NWT program work collaboratively with regard to fire science and specific wildfire training initiatives.

3.18. Canadian Interagency Forest Fire Center (CIFFC)

CIFFC is a national fire agency providing central functions for resource management and coordination between provinces, the Unites States and other countries. Additionally, CIFFC facilitates information sharing, policy, standards and agreement development to fire agencies as well as a number of specialized user groups. To enable CIFFC's ability to manage resources on a national level, FMFPB sends a wildfire situation report to CIFFC daily.

3.19. Saskatchewan First Nations and Northern Metis Communities

An important component of the wildfire program is the contingent of contract fire fighters who are hired each year to supplement capacity provided by professional seasonal fire fighters employed by the ministry. FMFPB currently has several multi-year agreements with Saskatchewan First Nations and Northern Métis Communities to provide fire fighters to this program. Additionally, some First Nations groups also provide specialized fire line training to FMFPB under a separate agreement. Contract details for all agreements are provided through negotiations between the parties. Maintenance, such as agreement amendments, is the responsibility of FMFPB. Invoice payment is the responsibility of FMFPB and NSS.

"Read-only" access to the CDMS (firefighter training and experience) information system is available to these groups to view training and experience history of their firefighters.

3.20. Independent Contractors

Independent contractors provide specific training to FMFPB fire line staff. Information from these contractors must be provided back to FMFPB to ensure the training is recorded properly for the affected staff members. This information is recorded in the CDMS system by FMFPB staff.

3.21. National Parks

Saskatchewan has within its borders several federally managed national parks including but not limited to Prince Albert National Park, Fort Walsh National Historic Park, Grasslands National Park, and Batoche National Historic Site. As such, FMFPB has an agreement through CIFFC with the national parks to support fire fighting activities within the national park borders if requested. This support can be made up of actual crews or equipment as needed and available. A quick strike agreement exists which covers 10 km on either side of the border between Prince Alberta National Park and the province and covers the entire park at Fort Walsh National Historic Park.

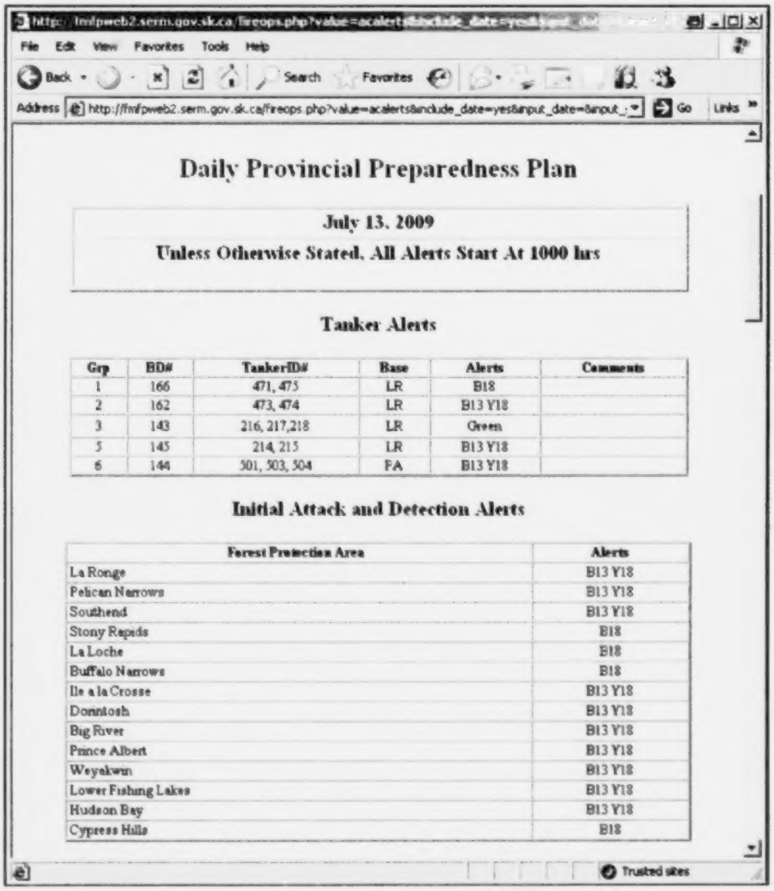
4. Current Situation Analysis

4.1. Current Business Lines

This section of the report outlines the current business areas within FMFPB and provides a brief look at what each business area is required to provide with regard to services either internally within the branch or externally to the Ministry, the Government as a whole, and to the public.

4.1.1. Fire Management Operations

This is the operational component of FMFPB with a mandate of preparedness, detection and suppression of wildfires. In an average fire season, Fire Management will oversee between 500 and 600 fires. In an extreme year, this number can more than double. To support this activity, fire management has been organized to support a preparedness model ensuring the resources that are available to the program are located as close to any anticipated trouble spots as is feasible. Additionally, contracts are in place to ensure emergency fire fighters in addition to more highly trained type 2 and type 1 fire fighters are available to aid in the effort.


File Edit View Favorites Tools Help
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http://fmfpweb2.serm.gov.sk.ca/fireops.php?value=acalerts&include_date=yes&input_date=&input_
Go
Links
Trusted sites

Daily Provincial Preparedness Plan

July 13. 2009

Unless Otherwise Stated. All Alerts Start At 1000 hrs

Tanker Alerts

Grp	BD#	TankerID#	Base	Alerts	Comments
1	166	471, 475	LR	B18	
2	162	473, 474	LR	B13 Y18	
3	143	216, 217,218	LR	Green	
5	145	214, 215	LR	B13 Y18	
6	144	501, 503, 504	PA	B13 Y18	

Initial Attack and Detection Alerts

Forest Protection Area	Alerts
La Ronge	B13 Y18
Pelican Narrows	B13 Y18
Southend	B13 Y18
Stony Rapids	B18
La Loche	B18
Buffalo Narrows	B18
Ile a la Crosse	B13 Y18
Dorintosh	B13 Y18
Big River	B13 Y18
Prince Albert	B13 Y18
Weyakwin	B13 Y18
Lower Fishing Lakes	B13 Y18
Hudson Bay	B13 Y18
Cypress Hills	B18

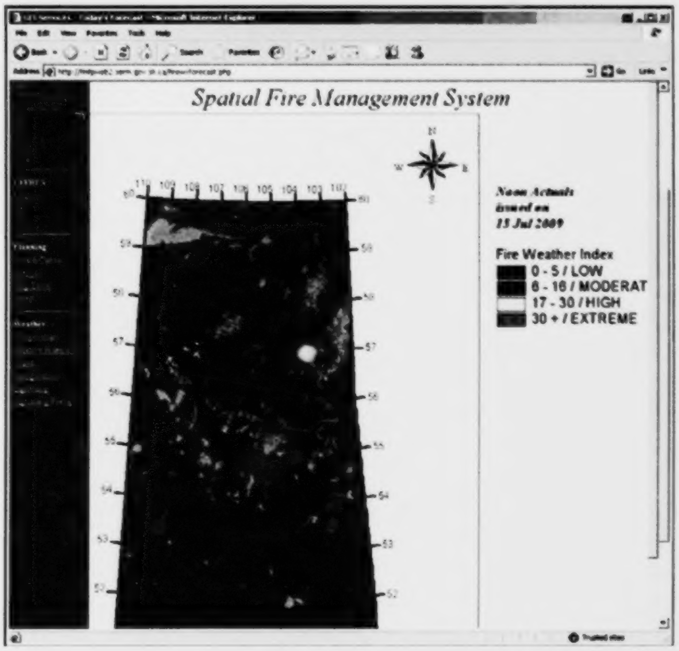
When preparedness and initial attack are unable to stop a fire, Fire Management must then engage with sustained fire suppression activities. Run in a similar fashion to a military campaign, Fire Management must draw on all of the other business areas to set up fire camps and acquire resources and supplies, organize air support, access up to date weather and fire behavior information, access spatial information on the area, acquire fire fighters with the required training and certifications and to make sure everything is documented to support cost recovery, litigation, liability and payroll.

4.1.2. Science and Planning

Organizationally, the Science and Planning group is set up in 4 separate units. Each unit has a unique and diverse set of responsibilities within the group.

Directly, the meteorological group provides weather information, provincial forecasts, spot forecasts, lightening strike data and other meteorological data used daily in the preparedness process as well as in real-time to support fire suppression efforts. This information is also used to determine "fire weather" information thus requiring a direct connection and integration with the science unit. Data is gathered from external government sources (Canadian and American), from third party suppliers as well as directly from weather stations maintained by Science and Planning and by Radio Technical Services.

The science unit utilizes the vast amounts of weather data to produce Fire Weather Indices which include fine fuel moisture codes, Duff moisture codes, drought codes and the initial spread index. It is also used to support the Canadian Forest Fire Behavior Prediction System which generates rate of spread, head fire index and crown fraction burned information. Additionally, scientific fire growth modeling and geospatial information data and services are provided to support planning and suppression activities. A wealth of information is stored to ensure that historical fire information, current geography and current values at risk are available to those who need it in the fire program


Spatial Fire Management System
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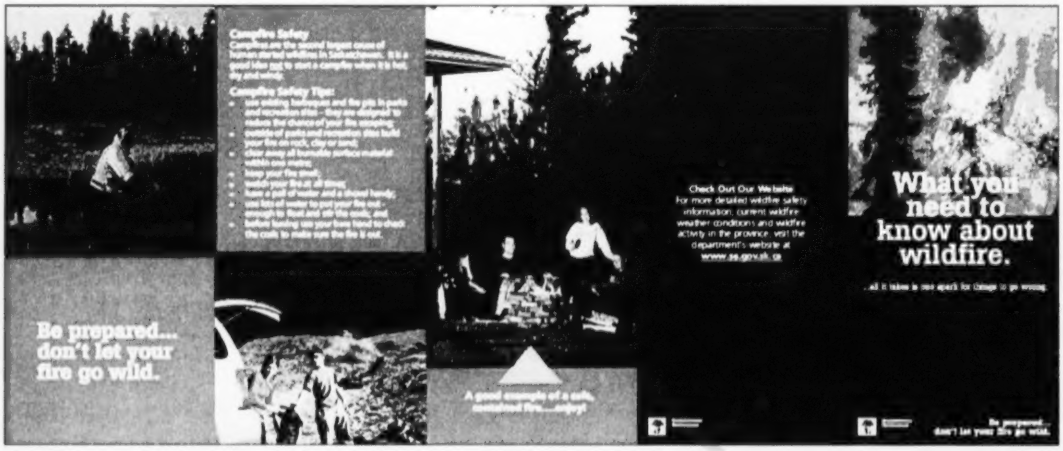
102
60
59
58
57
56
55
54
53
52
Noon Actuals
issued on
13 Jul 2009
Fire Weather Index
0 - 5 / LOW
6 - 16 / MODERAT
17 - 30 / HIGH
30 + / EXTREME

The policy and planning unit provide analysis and expertise with regard to program maintenance, policy development and legislation development. This group provides feedback on legislative documents and are the liaisons into other ministerial policy related activities. Access to statistics and general fire data provide them with information to create and build these policies which can relate to operations, safety and almost all other aspects of the fire program.

The investigations unit provides the information required to close the story of a fire. Working closely with FMFPB staff as well as Conservation Officers, information is gathered through an investigation process on human caused fires which support litigation and cost recovery efforts.

4.1.3. Training, Education, Prevention and Safety

Training, Education, Prevention and Safety plays a significant internal and external role with regard to the fire program. Three key units make up this program: Skills Development and Training, Education and Prevention, and Wildland Fire Safety.



Campfire Safety

Campfires are the second largest cause of human started wildfires in Saskatchewan. It is a good idea not to start a campfire when it is hot, dry and windy.

Campfire Safety Tips:

- use existing barbeques and fire pits in parks and recreation sites – they are designed to reduce the chance of your fire escaping;
- outside of parks and recreation sites build your fire on rock, clay or sand;
- clear away all burnable surface material within one metre;
- keep your fire small;
- watch your fire at all times;
- have a pail of water and a shovel handy;
- use lots of water to put your fire out – enough to float and stir the coals; and
- before leaving use your bare hand to check the coals to make sure the fire is out.

Check Out Our Website
For more detailed wildfire safety information, current wildfire weather conditions and wildfire activity in the province, visit the department's website at
www.se.gov.sk.ca

Be prepared... don't let your fire go wild.
A good example of a safe, contained fire.....enjoy!
What you need to know about wildfire.
...all it takes is one spark for things to go wrong.
Be prepared... don't let your fire go wild.

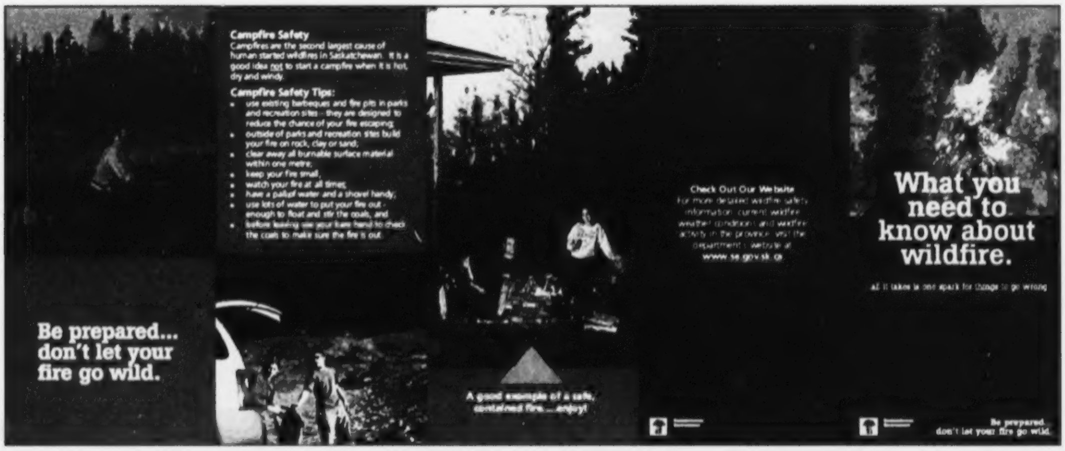
Internally, these units focus on providing the skills and safety training needed to allow the fire program to deliver its mandate. This means that OH&S concerns are satisfied, that policies and guidelines are addressed and that legal, legislative and operation requirements are met.

Externally, these units create a situation where FMFPB staff spends significant time and energy meeting and working with the public providing information on programs like "*Fire Smart*" which help people understand fire prevention and avoidance in relation to their homes and communities. This is a year round activity that is relevant for much of the province and relies heavily on statistics and materials that are gathered over the years including fire geography and fire cause information. Fuels management activities can also be a result of this prevention activity where certain communities or areas are identified as high risk for fire threat and fuel is removed within a managed process from around the community.

4.1.4. Logistics and Radio Technical Services

The Logistics Section provides the materials and management required to support most facets of the fire program. This includes three classes of items: class A items which includes valuable fire equipment like generators, pumps and radios; class B items made up of fire camp and fire line items such as hoses and stranglers; class C items made up of consumable and disposable items with a limited life span (clothes and batteries for example). These items must be moved to fire centers, bases and sub-bases to support preparedness and suppression activities as required and can range from simple bundle and shipping exercises (clothes, shovels) to sophisticated logistics efforts involving hazardous goods (barreled aviation fuel delivered to northern air tanker bases).

Along with a mature and robust logistics section, FMFBP has been fortunate to retain a radio and technical services group. Radio Technical Services (RTS) provides support to the communication efforts of the program in a number of different ways including wireless radio and data services. RTS maintains the large fixed weather station network



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Along with a mature and robust logistics section, FMFBP has been fortunate to retain a radio and technical services group. Radio Technical Services (RTS) provides support to the communication efforts of the program in a number of different ways including wireless radio and data services. RTS maintains the large fixed weather station network that is required to feed hourly weather data to the FMFPB meteorologists. Mobile weather stations are also deployed and managed through RTS.

RTS also supports the hand-held radios used by FMFPB as well as the radio towers, stations and repeaters needed to support detection and suppression activities. Maintenance is required to keep the network working, but research and development is also required to ensure the program has access to new technology that can increase efficiency and reliability.

Mobile communications trailers are needed to support larger type 1 and type 2 fires. RTS maintains these mobile units complete with satellite and radio communications enabling dispatch and aerial support, telephone and fax communications and internet access for systems support.

In addition to supporting the Ministry of Environment, RTS also supports municipal, provincial and federal clients on a cost-plus basis.

4.1.5. Aviation Operations

Aviation Operations is separated into two sections, Northern Air Operations and Support, Contract Aircraft and Safety.

North Air Operations (NAO) maintains a fleet of 20 government owned aircraft used to fight fires, detect fires and guide larger aircraft (bird dogs) during fire suppression activities.

- Four (4) Convair CV 580A's
- Three (3) DeHavilland Tracker's
- Six (6) Canadair CL 215's
- Four (4) Gulfstream Turbo Commander's
- Three (3) Beechcraft Baron B55.

Government Fleet

The larger aircraft are categorized as "skimmers" being water and foam carrying aircraft (capable of loading water by "skimming" over large water bodies) and fire retardant carrying aircraft commonly called "land based" tankers as they require a return trip to a tanker base after each drop. A diverse group of pilots, engineers and other land based support staff is needed to operate and maintain the fleet. All aircraft operated by the Ministry are governed by Ministry of Transport, Canadian Aviation Regulations (CAR) and strict safety management requirements. Managing the fleet under these necessary, but highly regulated circumstances, provides an additional set of due diligence and operating challenges to this area of the suppression operations.

Air Attack

Air Attack Officers are responsible to coordinate activities between air and ground suppression efforts and provide an essential communications link. Mobilized group crews and engaged aircraft must be in constant communication for strategic and safety reasons.

Training

The support and safety section provides training expertise for all aviation related activities within the wildfire program. This affects a majority of wildfire program staff as so many activities in the wildfire program are connected to Aviation Operations fleet of contract fixed wing and rotary wing aircraft. For instance, communications training can affect all ground crews who will be working near a fire as crew leaders need to be aware of air based operations at all time. Additionally, ground crews will most likely be deployed via helicopter at some point in a fire season. As such, a full day of aviation safety training is required in spring to ensure no harm comes to ground crews, support crews or pilots due to improperly executed activities in or around aircraft.

Contract Aircraft

The contract aircraft section manages a significant contract based process which provides fixed and rotary aircraft services to FMFPB as well as other sections and agencies including the Forestry and Parks Sections. Aviation Operations itself provides the tanker based services, but detection, mobilization and rotary based water suppression services come from contract based companies. Managing the contract negotiation, initiation and payment falls within this group's responsibility. Daily reporting for the government maintained fleet as well as the contract based fleet requires constant attention for safety, efficiency and cost related reasons.

4.1.6. Administration and Quality Control

As with any organization, an administrative component is required to deal with the day to day activities within the organization including management of its physical infrastructure, information management and information technology support, cost tracking and human resource management. Providing internal direction on budgetary issues as well as providing frequent cost incursion data to higher levels of administration requires a constant "thumb on the pulse" of operations. Many processes and information flows have been engineered in FMFPB to support this particular and onerous duty.

Administration staff provides weekly cost models, during the fire season, to Northern Support Services and monthly forecasts for the entire branch to Northern Support Services. To accomplish this, Administration staff receives and processes daily information regarding air operation activities, fire situation reports, fuel purchase information and fire line activity outside of the normal operating requirements (IE. personnel overtime). These can come in the form of paper reports, faxes, emails, electronic Wildfire Situation Analysis spreadsheets and various other ad hoc formats.

Within this group is also a mandate to ensure the fire program is running efficiently, is in compliance with appropriate legislation, and is continually improving based on performance criteria. This audit and assessment function spans the whole organization including large fire incidents, fire bases, fire centers and external service providers like the ITO.

Additionally there is a need to track, manage and deliver capital costs, play a liaison role for IT support and manage contracts for aviation and fire personnel; all of which are satisfied by the Quality Control and Administration group. Administration and Quality Control works with a full time project manager to ensure capital projects are run in a professional way and tracked accordingly. New observation towers and fire base structures are examples of current projects. For IT support, questions and concerns are filed directly with ITO. In situations where action needs to be escalated or other extra-ordinary circumstances come into play, the manager of the Administration group will directly liaise with ITO representatives to increase service. For contract support, staff will maintain the contracts and ensure that invoice process is completed against the correct contracts and that any necessary information is forwarded to Northern Support Services to ensure payment can be made.

4.1.7. Strategic and Business Planning

This segment of the FMFPB includes the executive management, aboriginal and business relationships as well as strategic planning segments of the program. This area is best described in the *Fire Management & Forest Protection Program Charter 2009/10* which states : "**The Executive Director of Fire Management and Forest Protection, along with the Ministry and Branch management teams is responsible for**

development and implementation of strategic planning and policy direction for the Branch. In order to facilitate and deliver strategic and business programs, the Branch has an Executive Assistant, Strategic Business and Performance Specialist and an Aboriginal Relationships Specialist.

The Aboriginal Relationships Specialist establishes consultative and business relationships between FMFP and Aboriginal communities and organizations in order to ensure best management practices in business relationships, consultation and contract negotiations. This position is integral in negotiations with First Nations and Northern Works emergency fire personnel contracts.

The Branch has a Strategic Business and Performance Specialist whose role is to ensure continuity of and professionalism in undertaking strategic planning and reporting processes. This includes research, development and facilitation of all Branch, Ministry and Cabinet documents and processes, the review and facilitation of acceptance processes for international reciprocal wildfire agreements and the development, review and evaluation of Branch strategic and performance planning processes."

4.2. Current Information Systems

This section of the report outlines all of the information systems used within FMFPB, those unique to the branch or those shared across the Ministry. A short description and current state assessment is provided to clarify the branches existing situation with its business systems. This assessment is aligned with the way the business system performs on its own, but does provide some discussion about how each system interacts with the other FMFPB systems.

By definition, for purposes of this particular section, an "Information System" is any business solution, business system, group of systems or process where information is managed electronically. These range from enterprise level databases and associated applications to simple Microsoft Excel spreadsheets.

Legend	Minimal or no issues – low priority.	Medium concerns that should be reviewed and possibly addressed – medium priority.	Serious concerns that must be addressed – high priority.	Out of scope.

4.2.1. Aerostudies

This is a web-based application which provides pilot specific ground school training targeted at re-certification. Training can be done wherever there is an Internet connection and can be suspended and picked up as time allows. This allows pilots, especially in the off-season when they are working elsewhere in the world, to access and complete their ground school prior to their seasonal recall to FMFPB. Pass/fail information is tracked within the application and is available for viewing by the student and an administrator (the Chief Pilot). Currently, NAO is a "subscriber" to this externally hosted service (consistent with most aviation companies with a small cadre of aircraft (ie: less than 50 airplanes).

Functions

- Provide pilot specific ground school training and re-certification within a web based environment
- Training can be "canned" training or customized courses based on the client's needs
- Track course completion and test scores for these training courses and on-line exams' results.

Group / Owner	Environment	Assessment
NAO / Bob Stallard (Chief Pilot)	[redacted]	Good concept and a good representation of the strategy desired at FMFPB. Application itself is isolated and has not yet been assessed for "fit" within FMFPB's overall training program.

4.2.2. Air Tanker Evaluation Database

This database provides a central repository for all the information included on the Air Tanker Evaluation forms. Information is entered into the system by the Aviation Services Coordination Technician at the Provincial Fire Center, from the forms received.

Functions

- Records ATE specific data and stores it in an electronic form. This includes information about the location of activity, flight times, fuel (timber) types and details of the tanker drop including volume dropped.
- Information can also be used to reconcile pilot and maintenance flight logs if required.
- Information can also be used for reporting thus providing statistics and possible costing information.

Group / Owner	Environment	Assessment
NAO / Eric Bratten (Air Attack Officer and Aviation Safety Officer)	Microsoft Access based standalone database. Locally hosted. Not currently integrated with FMFPB architecture.	A good historical source of ATE information. Business function is simply to respond to information inquiries similar to a data warehouse.

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- Training can be "canned" training or customized courses based on the client's needs
- Track course completion and test scores for these training courses and on-line exams' results.

Group / Owner	Environment	Assessment
NAO / Bob Stallard (Chief Pilot)	**Web based and hosted in Alberta. Not currently integrated with FMFPB architecture.**	Good concept and a good representation of the strategy desired at FMFPB. Application itself is isolated and has not yet been assessed for "fit" within FMFPB's overall training program.

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4.2.3. Aircraft Maintenance System (AMS)

A recently implemented system used to track inventory and perform "parts stores" functions for the NAO fleet. This system also provides aircraft maintenance scheduling functionality and has the ability to be expanded to include pilot log functionality and other related functions.

Functions

- Tracking of inventory used for aircraft maintenance. NAO has a "parts stores" division that uses this functionality.
- Tracking of maintenance schedules based on flying time of the aircraft. This is done to a granular level (by part or component). This includes airframe, engine, propeller and technical logs.
- The system also provides information needed for Transport Canada audits.
- Although not currently being used, extra modules are available for pilot log tracking. FLTDTY is being used to do this currently so this module is not currently being pursued.

Group / Owner	Environment	Assessment
NAO / Mike Bertrand (Chief Maintenance Engineer)	[redacted]	[redacted]

4.2.4. ArcGIS by ESRI

This software provides the basis for spatial data being used by the fire program. This includes spatially delivered weather, fire weather indices, maps, behavior modeling and values at risk. Being a significant user of spatial data, the fire program relies heavily on this information.

Functions

- Provides detailed mapping for all aspects of fire management.
- Provides accurate geographical locations of active and historical fire incidents.
- Provides records of burn areas for statistical purposes as well as for strategic planning purposes (reclamation and reforestation for example).
- Provides access to values at risk and to the road network.
- Provides the spatial base for delivering weather forecasts, fire weather indices, lightening activity, fire growth modeling and fire behavior modeling.

Group / Owner	Environment	Assessment
Ministry of Environment and	[redacted]	[redacted]

Science and Planning	[redacted]	[redacted]

4.2.5. Atrex

Atrex is used to track "Class C" inventory items within the logistics division of the FMFPB. These include consumable items like clothes, batteries and camp supplies (food, medical, etc.)

Functions

- Track "Class C" inventory items. These are small consumable items that, for the most part, do not require bar-coding or similar tracking as they are not considered accountable assets.
- Maximum and minimum inventory levels can be set for each item giving the logistics staff the necessary information for reordering and keeping needed items in stock as required.
- Items can be grouped together to create "kits" and "packages" for easier dispatch and tracking.
- Orders can be generated directly from the system.
- Reporting functionality provides necessary information on inventory levels and usage.

Group / Owner	Environment	Assessment
Logistics – Sandy Towill (Fire Depot Supervisor)	[redacted]	Atrex provides the intended functionality adequately. As with all stand alone products within the enterprise, integration, backup and support issues are a concern. By having a second inventory application, an extra level of complexity is added to the logistics division.

4.2.6. Aviation Management System (AvMan)

AvMan is used to track contract aircraft activity and ensure that invoices are reconciled and processed to allow for payment by NSS. In 2008, 1900 invoices were processed in this system.

Functions

- Records and tracks aviation companies, aircraft assets, rates, services and pilots that are on contract to provide services to FMFPB.
- Tracks specific contract details required for companies to legally work with FMFPB.

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- The system also provides information needed for Transport Canada audits.
- Although not currently being used, extra modules are available for pilot log tracking. FLTDTY is being used to do this currently so this module is not currently being pursued.

Group / Owner	Environment	Assessment
NAO / Mike Bertrand (Chief Maintenance Engineer)	**mySQL 4.0.13 based application utilizing a desktop based front end application. Centrally hosted with ITO.**	**This is a new and modern application that serves a very specific function for NAO. Integration opportunities are minimal but possible with a centrally based enterprise database. Expansion module opportunities exist.**

4.2.4. ArcGIS by ESRI

This software provides the basis for spatial data being used by the fire program. This includes spatially delivered weather, fire weather indices, maps, behavior modeling and values at risk. Being a significant user of spatial data, the fire program relies heavily on this information.

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- Provides the spatial base for delivering weather forecasts, fire weather indices, lightening activity, fire growth modeling and fire behavior modeling.

Group / Owner	Environment	Assessment
Ministry of Environment and	**ArcGIS workstation 9.2. ArcIMS 9.3 and ArcGIS**	**This is a universally accepted GIS platform which is used across the**

Science and Planning	**SDE server 9.3. Architecture is sound and integrated with MOE GIS. Centrally hosted with ITO (PA for test, Regina for production).**	**provincial government. The potential for expanding and building on a modernized GIS toolset is significant.**

4.2.5. Atrex

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Functions

- Track "Class C" inventory items. These are small consumable items that, for the most part, do not require bar-coding or similar tracking as they are not considered accountable assets.
- Maximum and minimum inventory levels can be set for each item giving the logistics staff the necessary information for reordering and keeping needed items in stock as required.
- Items can be grouped together to create "kits" and "packages" for easier dispatch and tracking.
- Orders can be generated directly from the system.
- Reporting functionality provides necessary information on inventory levels and usage.

Group / Owner	Environment	Assessment
Logistics – Sandy Towill (Fire Depot Supervisor)	**Delphi/DBISAM Database application. Stand alone, off the shelf product that is hosted locally on a user's computer.**	Atrex provides the intended functionality adequately. As with all stand alone products within the enterprise, integration, backup and support issues are a concern. By having a second inventory application, an extra level of complexity is added to the logistics division.

4.2.6. Aviation Management System (AvMan)

AvMan is used to track contract aircraft activity and ensure that invoices are reconciled and processed to allow for payment by NSS. In 2008, 1900 invoices were processed in this system.

Functions

- Records and tracks aviation companies, aircraft assets, rates, services and pilots that are on contract to provide services to FMFPB.
- Tracks specific contract details required for companies to legally work with FMFPB.

- Tracks Daily Flight Report information required to generate payment for services rendered and to track usage against the contracted hours available.
- Provides financial coding functionality to support invoice payment.
- Provides remote entry of flight related information.
- Provides reports to support invoicing and resource utilization.

Group / Owner	Environment	Assessment
NAO – Bob Spracklin (Aviation Contract Coordinator and Aviation Safety Coordinator)	SQL Server 2000 DB / Visual Basic 2003, ASP, .NET application. Versions and application technology is dated and nearing end of life. Centrally hosted by ITO.	The application is functioning but is in need of a review. The technology is dated to the point where patch and maintenance support from Microsoft will soon end. Integration point review and functional enhancements are required.

4.2.7. Basset Pro

Basset Pro provides a way of tracking fire "asset class" inventory items using bar-coding technology. Basset Pro is used primarily by the logistics group to track fire cache inventory, but also to a lesser degree by the Administration group to track office assets. Usage by Administration is infrequent.

Functions

- Read bar codes from appropriately bar-coded assets.
- Within the Logistics area, the product provides bar-code readings to allow manual reconciliation with the FEAST inventory system. This allows Logistics' staff to ensure that items are where they should be and are accounted for.
- Within the Administration area, the product provides a way of recording the assets as they are brought in and providing the potential of an up-to-date inventory.

Group / Owner	Environment	Assessment
Logistics – Sandy Towill (Depot Supervisor)/ Administration – Brenda Parenteau (Contract Administration Supervisor)	[redacted]	[redacted]

4.2.8. Bank of Montreal purchase card system (BMO)

The BMO system is a completely online, web based process for reviewing and authorizing purchases made on the BMO purchase cards. This application is used by many levels of staff within FMFPB and is found to be simple to use. Tight timelines surround the BMO process and can cause some frustration. Inability to correct or reject transactions by supervisors within the BMO system has made the application a "review and process" application only. No edits are allowed to statement entries. Rejected or disputed entries are handled manually outside of the system.

Functions

- Review of purchases by the purchaser.
- Review of purchases by the supervisor of the purchaser based on an authorization matrix.
- Authorization of purchases by a supervisor.

Group / Owner	Environment	Assessment
Government of Saskatchewan / Bank of Montreal	Web based and hosted by the Bank of Montreal. Not currently integrated with FMFPB architecture but integrated at the Ministry level.	A simple, but important system as large numbers of purchases are reviewed each month within this system. Little or no path for enhancements or changes exist, and the need to do so is minimal. Tighter integration with Government financial systems would be required before edits and transaction rejection could be accomplished.

4.2.9. Career Development Management System (CDMS)

The CDMS database and application was originally developed under a partnership between the FMFPB Education and Prevention group, Northern Air Operations and the Enforcement and Compliance group. Currently, Education and Prevention and Enforcement and Compliance both use the system. NAO has opted out of the arrangement in favor of simpler MS Access based applications.

The CDMS system was designed to manage specific demographic information including all individuals who have a training record as well as organizations who FMFPB requires contact information for. CDMS was also designed to store fire incident related information (similar to DFFIS), training data, curriculum and experience information. Certain classes of "dangerous work" require specific skills, training and experience. The CDMS business solution is designed to assist in the management of this activity.

Functions specific to FMFPB

- Maintain up to date demographic records (address, phone, etc) for individuals connected to the fire program, specifically Type 2 and Type 3 fire fighters, but also other staff who have taken FMFPB training.

- Tracks Daily Flight Report information required to generate payment for services rendered and to track usage against the contracted hours available.
- Provides financial coding functionality to support invoice payment.
- Provides remote entry of flight related information.
- Provides reports to support invoicing and resource utilization.

Group / Owner	Environment	Assessment
NAO – Bob Spracklin (Aviation Contract Coordinator and Aviation Safety Coordinator)	SQL Server 2000 DB / Visual Basic 2003, ASP, .NET application. Versions and application technology is dated and nearing end of life. Centrally hosted by ITO.	The application is functioning but is in need of a review. The technology is dated to the point where patch and maintenance support from Microsoft will soon end. Integration point review and functional enhancements are required.

4.2.7. Basset Pro

Basset Pro provides a way of tracking fire "asset class" inventory items using bar-coding technology. Basset Pro is used primarily by the logistics group to track fire cache inventory, but also to a lesser degree by the Administration group to track office assets. Usage by Administration is infrequent.

Functions

- Read bar codes from appropriately bar-coded assets.
- Within the Logistics area, the product provides bar-code readings to allow manual reconciliation with the FEAST inventory system. This allows Logistics' staff to ensure that items are where they should be and are accounted for.
- Within the Administration area, the product provides a way of recording the assets as they are brought in and providing the potential of an up-to-date inventory.

Group / Owner	Environment	Assessment
Logistics – Sandy Towill (Depot Supervisor)/ Administration – Brenda Parenteau (Contract Administration Supervisor)	**Version V3.3J. Stand alone, off the shelf product that is hosted locally on a user's computer.**	**This is an older application and provides a reconciliatory function to logistics and almost no functionality to administration. All activities around Basset Pro are manual and could be replaced with integrated functionality.**

4.2.8. Bank of Montreal purchase card system (BMO)

The BMO system is a completely online, web based process for reviewing and authorizing purchases made on the BMO purchase cards. This application is used by many levels of staff within FMFPB and is found to be simple to use. Tight timelines surround the BMO process and can cause some frustration. Inability to correct or reject transactions by supervisors within the BMO system has made the application a "review and process" application only. No edits are allowed to statement entries. Rejected or disputed entries are handled manually outside of the system.

Functions

- Review of purchases by the purchaser.
- Review of purchases by the supervisor of the purchaser based on an authorization matrix.
- Authorization of purchases by a supervisor.

Group / Owner	Environment	Assessment
Government of Saskatchewan / Bank of Montreal	**Web based and hosted by the Bank of Montreal. Not currently integrated with FMFPB architecture but integrated at the Ministry level.**	**A simple, but important system as large numbers of purchases are reviewed each month within this system. Little or no path for enhancements or changes exist, and the need to do so is minimal. Tighter integration with Government financial systems would be required before edits and transaction rejection could be accomplished.**

4.2.9. Career Development Management System (CDMS)

The CDMS database and application was originally developed under a partnership between the FMFPB Education and Prevention group, Northern Air Operations and the Enforcement and Compliance group. Currently, Education and Prevention and Enforcement and Compliance both use the system. NAO has opted out of the arrangement in favor of simpler MS Access based applications.

The CDMS system was designed to manage specific demographic information including all individuals who have a training record as well as organizations who FMFPB requires contact information for. CDMS was also designed to store fire incident related information (similar to DFFIS), training data, curriculum and experience information. Certain classes of "dangerous work" require specific skills, training and experience. The CDMS business solution is designed to assist in the management of this activity.

Functions specific to FMFPB

- Maintain up to date demographic records (address, phone, etc) for individuals connected to the fire program, specifically Type 2 and Type 3 fire fighters, but also other staff who have taken FMFPB training.

- Maintain up to date organization information tracking fire centers and fire bases and the Type 2 and Type 3 staff located in each area.
- Maintain training course information for courses delivered by the fire program or delivered by contractors associated with the fire program.
- Track which courses have been taken (successfully or unsuccessfully) by which staff members.
- Track career paths that can be used for career development and longer term career management.
- Track experience for each staff member as reported via the experience logs to ensure experience requirements are fulfilled for type of work duties assigned.

Group / Owner	Environment	Assessment
Education and Prevention – John Edwards (Manager of Education, Prevention and Safety) / Edwina Lewis (Program Support for Education, Prevention and Safety)	[redacted]	CDMS is technically and functionally modern but has been overbuilt for the function it currently provides. It has a significant potential for integration on all levels (data, authentication, business intelligence). It is acquiring a bad reputation for data incompleteness and inaccuracy which does not appear to be a reflection on its functionality.

4.2.10. Company Aviation Safety Management Program (CASMP)

CASMP is utilized by NAO to track aviation safety incidents, publications and process related information. This is needed to track any incidents and the stages within this process to meet Transport Canada requirements.

Functions specific to FMFPB

- Maintain up to date safety records for aviation related incidents.
- Track related publications and documents.
- This type of program is required for recognition by Transport Canada as an Aviation Safety Management System.

Group / Owner	Environment	Assessment
NAO / VTN Technologies	[redacted]	Application itself is isolated and has not yet been assessed for "fit" within FMFPB safety program.

4.2.11. Daily Forest Fire Information System (DFFIS)

The DFFIS application predates most systems in place at FMFPB. Starting as a Clipper application running on a DOS platform, it was migrated to a MS Access application with little change to functionality made at the time of conversion. DFFIS has minimal functionality and plays a repository role for the branch but has the potential for a much larger role for the organization. DFFIS holds the role of central operational information store, but is unable to meet this expectation.

Functions

- Tracks daily fire specific information including active fires, inactive fires, size of these fires, causes, geography and the number and type of resources currently assigned to the daily fire effort.
- Tracks historical fire information at the point in time the fire was officially declared out (IE. What the fire circumstance was at the time is was called out, not the way its conditions unfolded throughout the burn).
- Tracks resources being used on a fire including fire equipment, aircraft, heavy equipment and personnel.
- Tracks interagency resource mobilization and demobilization specific to Saskatchewan resources.
- Tracks fire hazard and fire weather information for a specific point in time.
- Generate reports and web based information for daily internal and public usage (IE. Daily Fire Situation reports and Media reports).

Group / Owner	Environment	Assessment
Fire Management – Scott Wasylenchuk (Preparedness Coordinator)	[redacted]	[redacted]

4.2.12. ENVIRONET

ENVIRONET is a highly used intranet based information system within the Ministry. A significant reference and research portal, it is used to obtain policy information, contact information, up-to-date spreadsheets, forms and tools as distributed by the Government of Saskatchewan.

Functions

- Provide access to MOE staff for up to date documents, policies, procedures, news item, demographic data, spreadsheets and tools.

- Maintain up to date organization information tracking fire centers and fire bases and the Type 2 and Type 3 staff located in each area.
- Maintain training course information for courses delivered by the fire program or delivered by contractors associated with the fire program.
- Track which courses have been taken (successfully or unsuccessfully) by which staff members.
- Track career paths that can be used for career development and longer term career management.
- Track experience for each staff member as reported via the experience logs to ensure experience requirements are fulfilled for type of work duties assigned.

Group / Owner	Environment	Assessment
Education and Prevention – John Edwards (Manager of Education, Prevention and Safety) / Edwina Lewis (Program Support for Education, Prevention and Safety)	**Oracle 9i R2 (9.2.0.7) DB; Oracle Application Server using JInitiator 1.3.1.18; Redhat Linux. Centrally hosted by ITO.**	CDMS is technically and functionally modern but has been overbuilt for the function it currently provides. It has a significant potential for integration on all levels (data, authentication, business intelligence). It is acquiring a bad reputation for data incompleteness and inaccuracy which does not appear to be a reflection on its functionality.

4.2.10. Company Aviation Safety Management Program (CASMP)

CASMP is utilized by NAO to track aviation safety incidents, publications and process related information. This is needed to track any incidents and the stages within this process to meet Transport Canada requirements.

Functions specific to FMFPB

- Maintain up to date safety records for aviation related incidents.
- Track related publications and documents.
- This type of program is required for recognition by Transport Canada as an Aviation Safety Management System.

Group / Owner	Environment	Assessment
NAO / VTN Technologies	**Web based and hosted in Alberta. Not currently integrated with FMFPB architecture.**	Application itself is isolated and has not yet been assessed for "fit" within FMFPB safety program.

4.2.11. Daily Forest Fire Information System (DFFIS)

The DFFIS application predates most systems in place at FMFPB. Starting as a Clipper application running on a DOS platform, it was migrated to a MS Access application with little change to functionality made at the time of conversion. DFFIS has minimal functionality and plays a repository role for the branch but has the potential for a much larger role for the organization. DFFIS holds the role of central operational information store, but is unable to meet this expectation.

Functions

- Tracks daily fire specific information including active fires, inactive fires, size of these fires, causes, geography and the number and type of resources currently assigned to the daily fire effort.
- Tracks historical fire information at the point in time the fire was officially declared out (IE. What the fire circumstance was at the time is was called out, not the way its conditions unfolded throughout the burn).
- Tracks resources being used on a fire including fire equipment, aircraft, heavy equipment and personnel.
- Tracks interagency resource mobilization and demobilization specific to Saskatchewan resources.
- Tracks fire hazard and fire weather information for a specific point in time.
- Generate reports and web based information for daily internal and public usage (IE. Daily Fire Situation reports and Media reports).

Group / Owner	Environment	Assessment
Fire Management – Scott Wasylenchuk (Preparedness Coordinator)	**MS Access DB and Access based Forms. Centrally hosted by ITO.**	**DFFIS provides no audit or historical tracking capabilities. The concept and expectations of DFFIS are at an enterprise level, but the delivery of the application does not meet that expectation and there is no way to meet that expectation using the existing application or technology it uses. The application is in an archaic format providing insufficient technology to serve the information needs of the branch.**

4.2.12. ENVIRONET

ENVIRONET is a highly used intranet based information system within the Ministry. A significant reference and research portal, it is used to obtain policy information, contact information, up-to-date spreadsheets, forms and tools as distributed by the Government of Saskatchewan.

Functions

- Provide access to MOE staff for up to date documents, policies, procedures, news item, demographic data, spreadsheets and tools.

Group / Owner	Environment	Assessment
Ministry of Environment	[redacted]	Can be out of date with demographic information. Is reportedly hard to navigate and does not follow the "three levels deep" guideline for web page navigation. FMFPB does not have any direct update access to this site nor any control over its format, content or behaviour.

4.2.13. Fixed Asset Information System (FAIS)

FAIS is a central financial system used to track capital items that must be depreciated over time. This system is used directly by NSS staff, but information provided from NAO is used to feed it.

Functions

- Provide capital asset tracking used for depreciation activities.

Group / Owner	Environment	Assessment
Ministry of Finance	DOS based application. Centrally hosted by ITO.	No direct interaction with the system by FMFPB.

4.2.14. Fire Equipment And Supplies Tracking (FEAST)

The Logistics Group within FMFPB tracks a significant number of items in their inventory as diverse as fire hoses, pumps, Pulaski's, camp trailers and initial attack fire trucks. To ensure that the FMFPB knows where everything is located, the FEAST system is used to track this equipment. FEAST is used to track Class A items which carry a higher value such as pumps and trailers, and Class B items which are typically made up of fire line items like hoses.

Functions

- Provides a method of storing individual inventory items including descriptions, quantities and, and in some cases, functions.
- Tracks the location and movement of individual items stored in the inventory.
- Track and locate groups of items which make up a "kit" or "package" of individual items.
- Tracks and locate groups of items or kits as they are transported.
- Provides a history of movement between locations of each individual item.
- Provides functionality to notify for re-ordering when quantities run low and the functionality to build an order for purchasing when required.

- Provides reporting functionality for various aspects of inventory tracking, movement, quantities, etc.

Group / Owner	Environment	Assessment
Logistics – Sandy Towill (Depot Supervisor)	[redacted]	The interface is dated but extremely stable and portable (minimal work required to move the application to a newer database). The application can be integrated easily and expanded with minimal technical issues (IE. Barcodes).

4.2.15. Fire Model

The Quality Assurance and Administration group maintains a large Microsoft Excel spreadsheet used to monitor real time costs as they are incurred and to project and estimate costs which cannot be monitored in real time. Using this tool, unexpected and unplanned expenditures can be forecasted enabling quicker access to funds and resources during higher than normal fire seasons.

Functions

- Documents fire program expenditures by accepting information that is supplied from FMFPB resources and keyed into preset fields.
- Projects fire program expenditures using existing real time data and accepting assumptions for future data.
- Assists in budget planning and forecasting.

Group / Owner	Environment	Assessment
QC and Administration – Duncan Campbell (Manager of Quality Control and Administration)	[redacted]	This is a mature, flexible and mobile tool. Integration points either do not exist or are not technically possible to allow day to day fire operation information to feed directly into this tool.

4.2.16. Flight Duty (FLTDUTY)

The Flight Duty application is used to track specific flying time and trip log information for NAO pilots. NAO has used this application since 2008 to record pilot flight duty information.

Functions

Group / Owner	Environment	Assessment
Ministry of Environment	**Web based Intranet. Hosted by ITO. Not currently integrated with FMFPB architecture.**	Can be out of date with demographic information. Is reportedly hard to navigate and does not follow the "three levels deep" guideline for web page navigation. FMFPB does not have any direct update access to this site nor any control over its format, content or behaviour.

4.2.13. Fixed Asset Information System (FAIS)

FAIS is a central financial system used to track capital items that must be depreciated over time. This system is used directly by NSS staff, but information provided from NAO is used to feed it.

Functions

- Provide capital asset tracking used for depreciation activities.

Group / Owner	Environment	Assessment
Ministry of Finance	DOS based application. Centrally hosted by ITO.	No direct interaction with the system by FMFPB.

4.2.14. Fire Equipment And Supplies Tracking (FEAST)

The Logistics Group within FMFPB tracks a significant number of items in their inventory as diverse as fire hoses, pumps, Pulaski's, camp trailers and initial attack fire trucks. To ensure that the FMFPB knows where everything is located, the FEAST system is used to track this equipment. FEAST is used to track Class A items which carry a higher value such as pumps and trailers, and Class B items which are typically made up of fire line items like hoses.

Functions

- Provides a method of storing individual inventory items including descriptions, quantities and, and in some cases, functions.
- Tracks the location and movement of individual items stored in the inventory.
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- Provides functionality to notify for re-ordering when quantities run low and the functionality to build an order for purchasing when required.

- Provides reporting functionality for various aspects of inventory tracking, movement, quantities, etc.

Group / Owner	Environment	Assessment
Logistics – Sandy Towill (Depot Supervisor)	**Oracle 9i R2 (9.2.0.7) DB; Oracle Application Server; PL/SQL Based Screens using ModSQL. Redhat Linux. Centrally hosted by ITO.**	The interface is dated but extremely stable and portable (minimal work required to move the application to a newer database). The application can be integrated easily and expanded with minimal technical issues (IE. Barcodes).

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- Projects fire program expenditures using existing real time data and accepting assumptions for future data.
- Assists in budget planning and forecasting.

Group / Owner	Environment	Assessment
QC and Administration – Duncan Campbell (Manager of Quality Control and Administration)	**Microsoft Excel. Stand alone spreadsheet that is hosted locally on a user's computer.**	This is a mature, flexible and mobile tool. Integration points either do not exist or are not technically possible to allow day to day fire operation information to feed directly into this tool.

4.2.16. Flight Duty (FLTDUTY)

The Flight Duty application is used to track specific flying time and trip log information for NAO pilots. NAO has used this application since 2008 to record pilot flight duty information.

Functions

- Records flight hours per pilot (flight duty information) as required by the Ministry of Transport.
- Monitors total flight hours and provides alerts when thresholds have been reached.
- Tracks pilot certification and training.
- Provides a mandatory recording and reporting function which, in the past, has been met with paper based logs.

Group / Owner	Environment	Assessment
NAO – Bob Stallard (Chief Pilot).	VB 6.0, Text file based DB architecture. Stand alone application that is hosted locally on a user's computer.	This is a non-integrated, stand alone system. Integration to a common dashboard would be extremely difficult as the backend data is in text files. Security and backups may be an issue. This is a single user system and the data is limited to NAO pilots.

4.2.17. Financial Management System (FMS)

Certain financial processes must flow through the Ministry of Environment's Financial Management System. In the context of the fire program, some data directly flows through this system and some data flows through FMS indirectly via NSS inputs into MIDAS and other financial management tools.

Functions

- Records contract information including standing offer rates to enable payment of invoices against contract.
- Records CVA related information to enable FMFPB payment for CVA vehicles.
- Processes cost recovery information (FMS accounts receivable).

Group / Owner	Environment	Assessment
Ministry of Environment	Oracle Financials V10.7, Oracle RBDMS 8.1.7. Centrally hosted by ITO.	Limited direct interaction with the system by FMFPB.

4.2.18. Multi-Informational Database Applications (MIDAS) – (MIDAS-AP, MIDAS-HR, MIDAS-Timekeeper)

Many areas of the Government use MIDAS for accounts payable, purchasing, human resource information tracking and payroll functions. The Fire program relies on MIDAS, either directly or indirectly, for these functions as well.

Functions

- Information supplied at the FMFPB level, is entered into MIDAS to create new employee's or update existing employee information. Updates flow to MIDAS-HR for certain regular employee training (not fire line specific training) and certifications.
- Bi-weekly and monthly time sheets and S4 expense sheets, filled out by all FMFPB permanent and seasonal staff, go through MIDAS for payment generation. These paper forms are faxed to Regina for keying into MIDAS by Ministry HR staff.
- Reporting functions include timesheet review and other HR functions. This is available directly to some FMFPB staff.
- The Finance MIDAS application records capital costs to enable FMFPB payment of invoices.
- Tracking and reporting for all accounts payable activities are done using the MIDAS-AP module.

Group / Owner	Environment	Assessment
Ministry of Finance	Oracle Financials. Centrally hosted by ITO.	Limited direct interaction with the system by FMFPB. Report generation is the primary interface for FMFBP.

4.2.19. Resource Tracking System (RTS)

The RTS or Flight Following system is currently available to limited Fire Management and NAO staff. This system allows the user to see all aircraft, enabled with the correct satellite transmission equipment. This equipment has been installed on most NAO tankers and birddogs. All contract aircraft flying in Alberta and BC are required to have this equipment if they are working in those provinces.

Currently, Saskatchewan is using RTS in a limited decision making role to view aircraft locations in real time.

Functions

- View and track aircraft activity in all available partner provinces.
- Review flight records and tracks historical usage to support investigations, cost recovery, etc.

Group / Owner	Environment	Assessment
BC Forestry, Selkirk Systems, Fire Management – Darcy Stead	Client side – Java 1.5+. Server side – Java 1.5+. Database – SQLServer/Oracle/Postgresql. Map server – WMS compliant map services over HTML. Currently hosted by BC Forestry.	The current version being used by FMFPB is dated and has limited expandability or integration potential based on its current location and delivery mechanism.

- Records flight hours per pilot (flight duty information) as required by the Ministry of Transport.
- Monitors total flight hours and provides alerts when thresholds have been reached.
- Tracks pilot certification and training.
- Provides a mandatory recording and reporting function which, in the past, has been met with paper based logs.

Group / Owner	Environment	Assessment
NAO – Bob Stallard (Chief Pilot).	VB 6.0, Text file based DB architecture. Stand alone application that is hosted locally on a user's computer.	This is a non-integrated, stand alone system. Integration to a common dashboard would be extremely difficult as the backend data is in text files. Security and backups may be an issue. This is a single user system and the data is limited to NAO pilots.

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Certain financial processes must flow through the Ministry of Environment's Financial Management System. In the context of the fire program, some data directly flows through this system and some data flows through FMS indirectly via NSS inputs into MIDAS and other financial management tools.

Functions

- Records contract information including standing offer rates to enable payment of invoices against contract.
- Records CVA related information to enable FMFPB payment for CVA vehicles.
- Processes cost recovery information (FMS accounts receivable).

Group / Owner	Environment	Assessment
Ministry of Environment	Oracle Financials V10.7, Oracle RBDMS 8.1.7. Centrally hosted by ITO.	Limited direct interaction with the system by FMFPB.

4.2.18. Multi-Informational Database Applications (MIDAS) – (MIDAS-AP, MIDAS-HR, MIDAS-Timekeeper)

Many areas of the Government use MIDAS for accounts payable, purchasing, human resource information tracking and payroll functions. The Fire program relies on MIDAS, either directly or indirectly, for these functions as well.

Functions

- Information supplied at the FMFPB level, is entered into MIDAS to create new employee's or update existing employee information. Updates flow to MIDAS-HR for certain regular employee training (not fire line specific training) and certifications.
- Bi-weekly and monthly time sheets and S4 expense sheets, filled out by all FMFPB permanent and seasonal staff, go through MIDAS for payment generation. These paper forms are faxed to Regina for keying into MIDAS by Ministry HR staff.
- Reporting functions include timesheet review and other HR functions. This is available directly to some FMFPB staff.
- The Finance MIDAS application records capital costs to enable FMFPB payment of invoices.
- Tracking and reporting for all accounts payable activities are done using the MIDAS-AP module.

Group / Owner	Environment	Assessment
Ministry of Finance	**Oracle Financials. Centrally hosted by ITO.**	**Limited direct interaction with the system by FMFPB. Report generation is the primary interface for FMFBP.**

4.2.19. Resource Tracking System (RTS)

The RTS or Flight Following system is currently available to limited Fire Management and NAO staff. This system allows the user to see all aircraft, enabled with the correct satellite transmission equipment. This equipment has been installed on most NAO tankers and birddogs. All contract aircraft flying in Alberta and BC are required to have this equipment if they are working in those provinces.

Currently, Saskatchewan is using RTS in a limited decision making role to view aircraft locations in real time.

Functions

- View and track aircraft activity in all available partner provinces.
- Review flight records and tracks historical usage to support investigations, cost recovery, etc.

Group / Owner	Environment	Assessment
BC Forestry, Selkirk Systems, Fire Management – Darcy Stead	Client side – Java 1.5+. Server side – Java 1.5+. Database – SQLServer/Oracle/Postgresql. Map server – WMS compliant map services over HTML. Currently hosted by BC Forestry.	The current version being used by FMFPB is dated and has limited expandability or integration potential based on its current location and delivery mechanism.

4.2.20. Silicon Wings

Silicon Wings is a product which was used by NAO to track technical aircraft engineering records in relation to air craft service time. Being strongly regulated by the Federal Ministry of Transportation, this system was important to their operations.

Silicon Wings has since been replaced with AMS and exists only as an historical record, maintained in accordance with Transport Canada regulation for potential investigative purposes.

Group / Owner	Environment	Assessment
NAO – Mike Bertrand (Chief Maintenance Engineer)	DOS based application.	Replaced by AMS.

4.2.21. Training Database (Incident Command System certification list, NAO training database, NAO engineers training database)

There are a number of training data repositories located within the fire program. NAO engineer training and certification, NAO staff training and certification including OH&S training and ICS certification tracking are three that have been uncovered during this study.

These smaller systems are in addition to systems like Aerostudies and CDMS. There is currently no overlap in course content but there may be significant overlap in the employees in each of these systems.

Functions

- Tracking training, certification and renewal cycles that are required for aircraft engineers.
- Tracking training, certification and renewal cycles for NAO staff in regards to a wide variety of tasks including machinery operation and safety standards.
- Incident Command System certification training and tracking for resource allocation during ICS related events.

Group / Owner	Environment	Assessment
NAO – Eric Braaten (Chief Air Attack Officer and Aviation Safety Officer), Fire Management – Courtney Larson	Microsoft Access, Microsoft Excel. Locally hosted.	These are one-off applications and spreadsheets. Technology is stable, but not robust. Integration would be difficult. Overlap in demographic information is highly likely. Development of some of these repositories is tied to perceived shortcomings in the CDMS application.

4.2.22. Values at Risk (VAR)

An aggressive project initiated by the fire program resulted in a spatially based Values At Risk database. This database is available via a web browser within the FMFPB Intranet site and provides a operational role to Fire Management. Utilizing unused aircraft contract time, FMFPB began building a database of structures, including recreational cabins, mines, industrial locations, work camps, outfitting camps and trapper cabins. Information collected concentrated primarily on the central to northern portion of the province. The database includes pictures and locations of "value" structures and is supplemented with ownership information from the Land Disposition Information System (LDIS) managed by the MOE Lands Branch. This data helps anticipate costs associated with a fire and assists in prioritizing attack and sustainment efforts provided by the operational group.

The sheer number and the diversity of these particular structural values provides a sizeable challenge to building a viable strategy for ensuring this database is kept up to date.

Functions

- Spatially records town sites, cabins, fire assets, LDIS values, fuel caches, SaskPower and SaskTel assets, timber values and timber priorities.
- Overlays fire information, fire history, weather, detection routes, fire tower observation ranges and various other land based imagery and boundaries over the values.
- Provides tools to upload new information and extract needed information from this spatial database.
- Provides tools to drill down into values. This includes a "point and click" approach to showing value location, ownership, supporting documentation such as a picture and property fire hazard assessment if available.
- Provides tools to analyze values as needed (measure distance, area, etc) to make operational action decisions.
- Assists the Fire Management group in prioritizing efforts and estimating fire suppression costs for large fire situations.

Group / Owner	Environment	Assessment
Science and Planning – Cynthia Mamer (GIS Programmer)	ArvGIS SDE, IMS, IMF, Oracle DB.	The VAR database has matured significantly since it's inception. A robust tool set, although dated, exists. The data is incomplete for a number of reasons – data from LDIS is not entirely correct; data gathered from the field is not entirely complete or correct. The upload feature to submit new information is non-functional. The effort to continue filing the

4.2.20. Silicon Wings

Silicon Wings is a product which was used by NAO to track technical aircraft engineering records in relation to air craft service time. Being strongly regulated by the Federal Ministry of Transportation, this system was important to their operations.

Silicon Wings has since been replaced with AMS and exists only as an historical record, maintained in accordance with Transport Canada regulation for potential investigative purposes.

Group / Owner	Environment	Assessment
NAO – Mike Bertrand (Chief Maintenance Engineer)	DOS based application.	Replaced by AMS.

4.2.21. Training Database (Incident Command System certification list, NAO training database, NAO engineers training database)

There are a number of training data repositories located within the fire program. NAO engineer training and certification, NAO staff training and certification including OH&S training and ICS certification tracking are three that have been uncovered during this study.

These smaller systems are in addition to systems like Aerostudies and CDMS. There is currently no overlap in course content but there may be significant overlap in the employees in each of these systems.

Functions

- Tracking training, certification and renewal cycles that are required for aircraft engineers.
- Tracking training, certification and renewal cycles for NAO staff in regards to a wide variety of tasks including machinery operation and safety standards.
- Incident Command System certification training and tracking for resource allocation during ICS related events.

Group / Owner	Environment	Assessment
NAO – Eric Braaten (Chief Air Attack Officer and Aviation Safety Officer), Fire Management – Courtney Larson	Microsoft Access, Microsoft Excel. Locally hosted.	These are one-off applications and spreadsheets. Technology is stable, but not robust. Integration would be difficult. Overlap in demographic information is highly likely. Development of some of these repositories is tied to perceived shortcomings in the CDMS application.

4.2.22. Values at Risk (VAR)

An aggressive project initiated by the fire program resulted in a spatially based Values At Risk database. This database is available via a web browser within the FMFPB Intranet site and provides a operational role to Fire Management. Utilizing unused aircraft contract time, FMFPB began building a database of structures, including recreational cabins, mines, industrial locations, work camps, outfitting camps and trapper cabins. Information collected concentrated primarily on the central to northern portion of the province. The database includes pictures and locations of "value" structures and is supplemented with ownership information from the Land Disposition Information System (LDIS) managed by the MOE Lands Branch. This data helps anticipate costs associated with a fire and assists in prioritizing attack and sustainment efforts provided by the operational group.

The sheer number and the diversity of these particular structural values provides a sizeable challenge to building a viable strategy for ensuring this database is kept up to date.

Functions

- Spatially records town sites, cabins, fire assets, LDIS values, fuel caches, SaskPower and SaskTel assets, timber values and timber priorities.
- Overlays fire information, fire history, weather, detection routes, fire tower observation ranges and various other land based imagery and boundaries over the values.
- Provides tools to upload new information and extract needed information from this spatial database.
- Provides tools to drill down into values. This includes a "point and click" approach to showing value location, ownership, supporting documentation such as a picture and property fire hazard assessment if available.
- Provides tools to analyze values as needed (measure distance, area, etc) to make operational action decisions.
- Assists the Fire Management group in prioritizing efforts and estimating fire suppression costs for large fire situations.

Group / Owner	Environment	Assessment
Science and Planning – Cynthia Mamer (GIS Programmer)	ArvGIS SDE, IMS, IMF, Oracle DB.	**The VAR database has matured significantly since it's inception. A robust tool set, although dated, exists. The data is incomplete for a number of reasons – data from LDIS is not entirely correct; data gathered from the field is not entirely complete or correct. The upload feature to submit new information is non-functional. The effort to continue filling the database is large. A strategy to keep**

		the system up to date does not exist. The database is not fully utilized at the fire center and base levels; local knowledge use is still more prevalent.

4.2.23. WebAir

WebAir is a Government of Alberta fire application. The database began as a central method of registering aircraft and aircraft companies that provided contract services to the SRD wildfire program. With the substantial crossover of contract aircraft between provinces, its usefulness for cross-border usage became apparent.

Functions

- Provides a centrally based and current source of contract aircraft details (types, call numbers, etc), aircraft companies and pilots needed to complete short and long term aviation contracts.

Group / Owner	Environment	Assessment
GOA SRD / NAO – Bob Spracklin (Aviation Contract Coordinator and Aviation Safety Coordinator)	Web based and hosted in Alberta. Not currently integrated with FMFPB architecture.	This database contains much of the information which is currently re-keyed each year into AvMan. It is considered up to date and is openly available. Alberta is actively trying to have it moved under the CIFFC umbrella.

4.2.24. WinAir

WinAir came into use at NAO around 2002 and was used by NAO to track aircraft parts used by NAO engineering operations. Tracking aircraft parts for location, serviceable time and quantity is mandatory for regulatory and operational reasons. WinAir is currently used by the Government Executive Air Services and Air Ambulance which are managed by the Ministry of Government Services.

WinAir was recently replaced by AMS at Northern Air Operations.

Group / Owner	Environment	Assessment
NAO – Mike Bertrand (Chief Engineer)	Unknown	Replaced by AMS.

4.2.25. Weather Systems (Autocaller, Lightening, MODIS, WXP/WXP Ingestor)

		The database is not fully utilized at the fire center and base levels; local

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4.2.25. Weather Systems (Autocaller, Lightening, MODIS, WXP/WXP Ingestor)

There are a number of components to the weather system which are all managed within the FMFPB Planning and Science group. These components are made up of a mix of purchased products and services along with a number of internally developed applications and processes that gather data, process data, and display data for use within the branch. As the weather group, the GIS group and the research staff within Planning and Science utilize a number of similar services, the lines between the management of weather data and those specific tools used for GIS and science (IE. Models) can blur at times.

Functions

- Gathering of real time weather data from FMFPB weather stations and Environment Canada weather stations.
- Gathering of real time lightening strike data.
- Receiving and displaying satellite based information.
- Storing and processing a variety of weather based data to support Spatial Fire Management System data, calculations and displays.
- Storing and processing a variety of data to support model data, calculations and displays.
- Utilizing data to provide forecasts to Fire Management.

Group / Owner	Environment	Assessment
Science and Planning - Daniel Poirier (Senior Meteorologist)	MS Windows. Linux. PostgreSQL 8.1. PostGIS 1.2. Unisys. Locally hosted.	The systems utilized and developed within this group are stable and productive. The technology used specifically for weather collection is similar to those systems used elsewhere in the country. The database, mapping, web and processing technology utilizes opensource technology not compliant with the standards currently used by ITO, the Government at large or with the GIS groups' technology. Integration with other systems is possible, but would be challenging.

4.2.26. Science Systems (Pandora, Pegasus, Prometheus, Preparedness Utilization Cost Calculator-PUCK, Spatial Fire Management System)

There is an active fire science society across Canada with participants from various universities, training centers, think tanks and fire programs. The work done within this group has generated fire growth models, smoke models and environmental models used at differing levels within the provincial fire programs and the national fire program.

Functions

- Provision of fire growth modeling for large fire situations (Pandora, Pegasus, Prometheus).
- Supplement preparedness planning by providing a tool to assist in placing Initial Attack resources (rotary wing aircraft) in locations that will best cover the values requiring protection (PUCK).
- Supplying Spatial Fire Management data to Fire Management on a daily basis. This provides the basis for preparedness planning.

Group / Owner	Environment	Assessment
Science and Planning – Paul Maczek (Fire Science Specialist)	MS Windows. Linux. ArcView – Avenue. PostgreSQL 8.1. PostGIS 1.2. Mapserver 4.1. Mapserver 5.0. Locally hosted on a FMFPB workstation / server.	The tools provide value to the fire program, but in some cases are under utilized due to complexity, availability and education. The environments used to deliver these tools are not cohesive. Integration with other systems is possible, but may be challenging.

4.3. Information Systems under Evaluation or Development

This section provides an overview of systems that are either under development or being assessed for use at the FMFPB.

4.3.1. Fire Occurrence Prediction / Lightening Caused Holdover Fire Model (FOP/LCHFM)

This model, developed at the University of Toronto, is being reviewed by the FMFPB for use by Fire Management in helping with preparedness planning. The model utilizes fire weather data (SFMS) to predict where lightening will cause holdover situations which can then direct observation and patrol activities.

4.3.2. Inventory Management Information System (IMIS)

The IMIS application is an inventory management system that was originally designed by the Ontario fire program, was released to the Alberta fire program for their use, and has evolved under the Alberta program to what it is today. Alberta offers the program to other fire programs in Canada for use in their specific situations.

Logistics section staff are currently reviewing the IMIS application for viability and a test version of the application is being hosted by ITO for FMFPB's review.

4.4. Current Infrastructure and Application Support

4.4.1. ITO

Forest Management and Fire Protection Branch manage their infrastructure and application support in a similar fashion to the rest of the Saskatchewan Ministry of Environment. The Information Technology Office (ITO) provides the following general services to FMFPB.

- General support of infrastructure including desktop and laptop support and replacement, network connectivity and printing.
- Security and system access to the GOS network.
- Desktop application support for all general applications including email, word processing, spreadsheets and other generally available office related software.

The ITO provides services to the FMFPB in support of their specialized program offerings under a SLA created specifically for the branch. The intention of the SLA is to ensure response times and service offerings are appropriate for emergency services. The ITO provides the following specialized services to FMFPB.

- Support of satellite systems connecting 4 fire bases, located throughout Saskatchewan, to the GOS network.
- Support of satellite enabled mobile command trailers (technical infrastructure only) which can be mobilized on an as-needed basis.
- Hosting, backup and recovery support of specialized applications, specific to the fire program, including AMS, CDMS and the GIS based environment.
- Hosting, backup, recovery support, application development and enhancement support of specialized applications, specific to the fire program, including DFFIS and AvMan.

Service support and change requests are put forward by FMFPB staff to the Quality Control and Administration manager. This manager forwards these requests to the ITO and a ticket is created to track the request.

4.4.2. FMFPB

Some weather and science related environments and applications are maintained internally by the branch. These systems are complex, critical to FMFPB operations and do not fit easily into the ITO framework. They are required to be up and running 24/7 during the fire season and have been identified as critical to FMFPB operations.

4.4.3. Assessment

The current ITO support situation does not meet the needs of the fire program for a number of reasons. Analyzing interview results from over 90 FMFPB staff located throughout the central and western fire center areas including 2 satellite supported fire bases, personally participating in a number of ITO support tickets while on this project, and reviewing the process and examples with the FMFPB liaison has revealed a number of shortfalls.

In regards to general support provided by ITO using the description above, the following assessment can be made:

- Tier one (1) support is perceived to address issues in 50% of all cases.
- Resources sent out on issues where tier 1 support was not adequate, are found to be helpful.
- Getting resources to show up will commonly take one (1) or more follow up contacts via phone or email.
- In general, FMFPB staff indicate that ITO provides acceptable support for queries including desktop support for popular office software, keyboard and mouse issues, printer issues and network issues.

In regards to support, specific to FMFPB's needs, provided by ITO using the description above, the following assessment can be made:

- Tier one (1) support regarding applications specific to FMFPB is varied. Responses can be dealt with quickly or can take weeks to resolve. The key seems to be in locating an ITO resource who knows about the application early in the process. Unfortunately, this may mean preempting the process to ensure the correct resource is located. Discuss between ITO groups appears dysfunctional in this process.
- Application enhancement and development support is adequate.
- Escalation beyond tier one (1) support regularly means calls to ITO management and regular follow-on escalation requests.
- Support of the FMFPB's unique infrastructure (satellite connectivity, remote sites) is inadequate. Resolution of connectivity issues for these locations has taken months.
- Support for FMFPB's mobile infrastructure, which generally means support for large fire support (an emergency situation), has lead to significant frustration for Incident Command teams. This appears to be the result of a gap between FMFPB needs and what the ITO is capable of delivering.
- FMFPB is required by the ITO to operate within a secured GOS network limiting their options for remote access via Satellite. With the introduction of Connectra for secure external access to the GOS network, there is confusion around this requirement.

Two specific examples highlight the current situation.

(1) A seasonal administrative clerk in Buffalo Narrows began working, for 2008, in mid-April of 2008. When she had completed her season in October 2008, a request was sent to ITO to suspend her account. In early 2009, a request was sent again to ITO to schedule the enabling of her account. She began work on April 14th and her account was active. On April 16th, 2 days after her season began, her account was disabled as the initial October 2008 request was finally executed.

(2) In the summer of 2008, a satellite system was installed at a remote fire based near the Cypress Hills. A lack of land-line based connectivity required a system like this to be installed. ITO facilitated the SCN based installation which had specific upload and download requirements. Shortly after, speed issues were noted and discussions began to have ITO resolve the issue. Attention was given and finally in the summer of 2009, the issue was resolved primarily due to the assistance of a FMFPB Technology Transfer Specialist assisting ITO in the issue resolution. Almost one year from issue identification to issue resolution. **Similar situations also played out for satellite installations at Dorintosh and Lower Fishing Lakes**.

In regards to the FMFPB's internally maintained architecture and infrastructure, the following observations can be made:

- Systems are generally operational and available for use by Fire Management.
- Systems support is provided by staff not dedicated to this role.
- Design and architectural decisions are not guided by category, function or user driven requirements.
- System integration is not well planned. A role for this activity is not defined.
- Dedicated staff are not available for internal architecture, infrastructure, IT planning, IT strategy and business analysis.

4.5. Processes unsupported by current Information Systems

Many processes have been identified within the seasonal FMFPB cycle. Processes have also been identified which are not reliant on the primary fire season; these are less obvious but in some cases just as critical as the seasonal processes. This section identifies the primary high-level processes which have been identified which are important to the branches operations but are currently not fully supported by an existing FMFPB system.

4.5.1. Time Management

All FMFPB employees including term staff, permanent part time, labor service, permanent full time or out of scope management, are affected by the time keeping cycle. This task has been identified as the number one administrative task by nearly every employee interviewed. Although the time keeping process is supported by a government supplied spreadsheet, the sheet is extremely complex and slows the process down rather than speeding it up for many users.

B1 term and permanent part time employees:

- Employee fills the supplied spreadsheet out for the past two (2) week period of activities including normal time, over time, sick time, vacation time, etc.
- Employee submits the timesheet to supervisor electronically.
- Supervisor reviews for errors and corrects if needed.
- Supervisor sends the timesheet to Regina electronically.

- Locally, the electronic spreadsheet is stored or discarded, depending on available space.
- In Regina, the timesheet is printed and keyed into MIDAS by time keepers.

B1 labor service employees:

- Employee fills the supplied spreadsheet out for the past two (2) week period of activities including normal time, over time, sick time, vacation time, etc.
- Employee submits the timesheet to supervisor electronically or prints the timesheet and submits on paper, depending on the situation.
- Supervisor reviews for errors and corrects if needed.
- Supervisor prints and signs the timesheet.
- Supervisor faxes the timesheet to Regina.
- Locally, the electronic spreadsheet is stored or discarded, depending on available space. Paper copies are filed appropriately.
- In Regina, the timesheet is keyed into MIDAS by time keepers.

B2 permanent full time employees:

- Employee fills the supplied spreadsheet out for the past two (2) week period of activities including over time, sick time, vacation time, etc. Normal time is carried forward and does not require entry.
- Employee submits the timesheet to supervisor electronically.
- Supervisor reviews for errors and corrects if needed.
- Supervisor submits timesheet to timekeeper in Prince Albert electronically.
- Locally, the electronic spreadsheet is stored or discarded, depending on available space.
- In Prince Albert, the timesheet is keyed into MIDAS by time keepers.

M1 out of scope managers:

- Manager fills the supplied spreadsheet out for the past month of activities including over time, sick time, vacation time, etc. Normal time is carried forward and does not require entry.
- Manager submits the timesheet to supervisor electronically.
- Supervisor reviews for errors and corrects if needed.
- Supervisor submits timesheet to timekeeper in Prince Albert electronically.
- Locally, the electronic spreadsheet is stored or discarded, depending on available space.
- In Prince Albert, the timesheet is keyed into MIDAS by time keepers.

MIDAS Timekeeper module does support the data entry process, but is used for a minority of the cases above (approximately 25%). Spreadsheets play a support role, but cannot be defined as systems as they are used as "electronic paper". MIDAS does not support the loading of data from spreadsheets. Keying only is supported.

4.5.2. Expense Management

Expenses, outside of the BMO process, are done in a similar manner to times sheets. The expenses are entered into a spreadsheet supplie by the government; the information is reviewed, corrected if necessary, and processed. The information makes its way to Northern Support Services for processing and payment once the supervisor has approved it.

NSS staff have indicated that BMO expenses should still be recorded in the S4 sheet for proper reconciliation, but that this generally does not happen.

Once the payment is processed at NSS and the information is entered into MIDAS, the payment is sent to the employee.

NAO also stores S4 information in an Access database for reference purposes, prior to sending the information to NSS.

4.5.3. CVA Management

Central Vehicle Authority information is tracked in a similar manner to time sheets and S4's. Each employee, who has been assigned a CVA vehicle, maintains a log inside the vehicle recording the usage and activity. This information is transcribed into a spreadsheet each month, printed, then reviewed and signed by a supervisor. This information is tracked at the fire center level (regional and provincial).

A signed hardcopy of the CVA log is sent to NSS for processing each month. NSS staff enter the data into the FMS application. The CVA administrators use this information to generate an invoice for FMFPB which is received by NSS and from which a payment is received. Coding to the appropriate budget areas is done at that time. Information does come back to FMFPB, but it is only summary and dollar amount information. Reconciliation to the responsible employee is done manually at FMFPB.

4.5.4. Authorization Processes

Driven by a requirement for signature based authorizations, most processing within FMFPB uses a paper/fax based approach to information transfer. This includes:

- Resource requests between fire centers. Faxed documents can be sent 3 or more times to acquire the proper authorization.
- Initial Fire Reporting from the fire center to the provincial level as well as from the provincial level to the fire center level.
- Purchase order based processing.
- Expense based processing.
- Air tanker requests (similar to resource requests).

- Daily situation reports, preparedness plans / resource reporting (fire center to provincial level).

4.5.5. Resource Usage and Confirmation Processes

Daily activities must be reported to ensure proper statistics are being kept, financial processing can take place and cost modeling can happen as close to real time as possible.

- Air tanker evaluation reports, faxed from tanker bases to the provincial center for entry into a standalone database.
- Flight reports filled in by contract pilots and faxed to the provincial center for payment processing once the formal invoice is received.
- Fuel purchase information received from logistics.
- Daily situation reports and Wildfire Situation Analysis.
- Imported personnel and aircraft.
- Quick strike costs.

4.5.6. Fire Statistics and Investigation Results

Information needed to support each fire can become large and complicated when a large fire occurs. This can be considered "the story of a fire". The information can be made up of many items, including many already mentioned, as well as fire investigation results in human caused fire situations, burn size and location information and supporting documentation including pictures and files. Some of this information can be gleaned from FMFPB systems, but a majority is kept on remote and personal computers outside of a formal system.

- Fire investigation findings.
- Supporting documents and pictures.
- Daily burn sizes (sometime supported within the GIS data at the FMFPB level).
- Litigation information where applicable.
- Post-fire ecological report data.

4.5.7. Contract Information

Contract information needed to support heavy equipment standing offers is a paper based process. Some portions of the contract components make their way into various systems for use in acquisition and payment processes, but the yearly processes to renew information is manually driven.

- Request and receive new heavy equipment contracts.
- Re-enter all applicable data into applicable systems (no carry-over). This also applied to rotary and fixed wing contracts that use AvMan making it a partial supported process.

4.5.8. Health and Safety

Safety inspections and Incidents that occur in the field are to be recorded. In the case on an incident, they are recorded only when an employee chooses to report them.

- Record and document incidents. Driven by the employee.
- Record and document safety inspections (IE. Observation tower inspections). Paper driven with no system support to ensure they have been done and that a follow-up inspection is scheduled.

4.5.9. RTS Inventory

Radio Technical Services maintains an inventory of items to support mobile camp deployment, radio usage, weather station maintenance and a variety of other services they offer. Currently, there is no system in use to support their inventory tracking processes.

4.5.10. Policy

The policy analysts within Science and Planning are responsible to maintain policy associated with FMFPB. Policy can be affected by a number of reasons including legislation and health and safety. Currently, there is no system in place to support the tracking and versioning of policy changes.

4.5.11. Document Management

Although the theme of document management is discussed throughout this document as a process needed to support fire information gathering, investigation results, contract management, policy management and many more processes, it deserves mention in this section. No formal document management system or process exists at FMFPB.

5. Challenges facing Fire Management and Forest Protection Branch

There are a number of challenges that face FMFPB. Some are general issues that affect more than just the branch and others are specific due to seasonality, geography, strategy and context of the fire program.

5.1. Workforce

As with any seasonal work force, continuity of skills and familiarity with tools is an issue as each season comes and goes. Much of the work force required for the fire program to operate is engaged from April to October. This not only includes fire fighters but clerical, logistical and support staff. As a result, skills which are developed and matured between April and October are dulled and lost between November and March. This puts added pressure on the information systems that are used within the program. Confusing, elaborate, poorly designed systems will create longer ramp-up times each spring.

FMFPB requires staff to be located in remote locations as well. With 29 locations including fire centers, bases, sub-bases and tanker bases located across Saskatchewan, a skilled workforce with well defined office and technical skills at each location cannot be assumed. Competencies in the areas required to operate medium to sophisticated systems do not exist. Compounded by a high turn over rate in northern and remote communities, this makes up one of the most significant challenges to the FMFPB.

Challenge: information systems must be intuitive with clear, well-defined processes. Help must be available within the systems where appropriate and available via a support network external to the application (help desk). Hiring practices, staff sourcing and centralization of some services may need to be considered.

5.2. Access

Information systems are utilized at most of the 29 locations across the province. Some locations only require simple systems needed for time-keeping, expense tracking or managing photos and spatial file downloads. Others locations require access to all of the systems noted in the current information systems section within this document. At present, dial up connections still being used at tanker bases do not provide the needed connectivity to perform all of the required functions. In addition, some work is either done at staff members' homes or at another nearby office that provides high speed access.

Buffalo Narrows Region	Category	Speed
Buffalo Narrows	Fire Center	DSL
Buffalo Narrows	Fire Base	DSL
Big River	Fire Base	High Speed
Green Lake	Sub Base to Big River	High Speed
Dorintosh	Fire Base	Satellite (SCN)
Lac de Isles	Sub Base to Dorintosh	Dial Up
Ile a la Crosse	Fire Base	High Speed

La Loche	Fire Base	High Speed
Medow Lake Tanker Base	Tanker Base	High Speed
Buffalo Narrows Tanker Base	Tanker Base	Dial Up
Meadow Lake Office	Meadow Lake Office	DSL
La Ronge Region	Category	Speed
La Ronge	Fire Center	High Speed
La Ronge	Fire Base	High Speed
Denare Beach	Sub Base to Pelican Narrows	High Speed
Southend	Fire Base	High Speed
Wollaston Lake	Sub Base to Southend	Has High Speed but is not working right now just hooked up last year
Stony Rapids	Fire Base	High Speed
Pelican Narrows	Fire Base	Satellite (InfoSat) – shared with conservation officers which reduces useful throughput.
La Ronge	Tanker Base	High Speed
Stony Rapids	Tanker Base	High Speed
La Ronge	Norther Air Operations	High Speed
Prince Albert Region	Category	Speed
Prince Albert	Fire Center	High Speed
Prince Albert	Fire Base	High Speed
Melfort	Sub Base to Prince Albert	High Speed
Hudson Bay	Fire Base	High Speed
Cumberland House	Sub Base to Hudson Bay	High Speed
Lower Fishing Lakes	Fire Base	Satellite (SCN)
Weyakwin	Fire Base	High Speed
Emma Lake	Sub Base to Weyakwin	Dial up (with temporary satellite system - HSC)
Cypress Hills	Fire Base	Satellite (SCN)
Prince Albert	Tanker Base	High Speed
Hudson Bay	Tanker Base	Dial Up

Internet connectivity for FMFPB

In addition, FMFPB maintains portable incident command trailers required in emergency situations, such as a large fire situation requiring a type 1 incident command team. The geographical possibilities are almost limitless with this model.

Challenge: deliver access to information under extremely remote situations with the possibility of extremely inhospitable conditions. Systems must be "light" and work well on laptops over constricted and cluttered network connections (satellite links). **Section 7.2 suggests ways to meet this challenge**.

5.3. Infrastructure and Support

The demand for IT infrastructure and support for that infrastructure is unique within FMFPB. As described under "Access" above, the administrative components of the program are diverse. Day to day support cannot be delivered in the same manner as it would with an office building located in downtown Saskatoon or Regina. Significantly more emphasis on telephone conversations and thus communication skills and contextual knowledge is required. Reliance on remote support mechanisms is higher thus requiring stable network connections and reliable tools.

The service model that ITO has developed and supports is built around a generic tier one (1) service model where a 1-800 number is called, and support is given from the first available technician. This model works well where the vast majority of calls for service or help are of a general nature, and apply to generic office environments within an 8am to 5pm Monday to Friday environment. Given that a tier one representative cannot provide the solution at that level, a tier two (2) resource can be sent out to resolve the problem.

This model breaks down within the emergency and non-generic model of the FMFPB. Tier 1 calls can be generic office calls, but are most often in relation to a specific FMFPB process or systems which may include aviation management, GIS or spatial data issues, a network connectivity issue which may have to do with satellite connections or issues specific to seasonal staff and the reactivation of hardware or accounts in a remote office. To compound this, the call may come on a Sunday morning from a remote incident command center and a large fire situation may also be close at hand.

Challenge: provide real time technical, infrastructure and application support, 7 days a week during fire season (generally April to October), in remote locations, with resources who understand the systems and can provide the assistance needed for an emergency services based organization.

5.4. Large Fire Support

Although similar to "Infrastructure and Support", Large Fire Support is a major challenge, highlighted by a major incident in 2008. A large fire occurred near Pelican Narrows in the summer of 2008. An ICS team was dispatched to deal with the fire due to its size and proximity to communities which were in immediate danger. As per a defined process, a mobile camp was deployed from which the ICS team would operate.

ITO was dispatched to set up the communications and connectivity at the mobile camp. After configuring the camp, the ITO representative left camp and returned to Prince Albert. Issues arose immediately and some of the team had to travel back and forth to Pelican Narrows to communicate important information back to the provincial center. The ITO representative was unable to return and the camp operated for 2 days without proper connectivity. Given the emergency situation they were operating within, this was unacceptable.

Challenge: provide real time technical, infrastructure and application support, 7 days a week (during fire season), specific to remote locations, with resources who understand the systems and can provide the assistance needed for an emergency services based organization.

5.5. Accountability and Results

Fire prevention, preparedness and suppression is achieved at a high cost. Protecting human life, communities and valuable infrastructure justifies that cost. It does not however provide a free ticket for budget and accountability. Two main drivers affect the fire program in a similar fashion to how they affect the rest of government and the Ministry of Environment. These are: 1: Fiscal accountability and 2: the recent Results Based Regulatory initiative.

Accountability also comes at a high cost and can lead to inefficiencies if the demand comes quicker than the planning can be done. A quote from the Clifton Report *Towards a Results-Based Regulatory System* states it the best : "**The management team as a whole estimates that, on average, administrative complexity and overhead burdens consumes an inordinate amount of their and their staffs' available time, leaving less than 45% for actual program delivery. Administrative simplification is urgently needed to improve the effectiveness of staff.**" This provides a window on the operations within the fire program as well. Significant time is spent preparing time logs, preparing expense sheets, preparing CVA logs, processing and reviewing BMO statements, sending and replying to emails, gathering data for cost reporting and justification, referencing costing and rates within contracts and stumbling around web pages trying to find correct document versions and updates.

Increasing the efficiency of operations and administration can generate results more quickly in a number of areas. Increased time for operational work can be a direct result of this shift to greater efficiency. Fighting fires is after all what the fire program is all about. These are the results that are expected of the program.

Challenge: offer modern and robust tools, remove redundant processes, integrate systems and identify process improvements that streamline information gathering, managing and reporting without creating user frustration and additional overhead.

6. Best Practices Revealed

The fire programs across Canada are mature organizations that have grown within similar circumstances and are trying to achieve similar goals to each other. They do however operate under different political infrastructures and as such, tend to take different approaches to administrating their programs and managing their information. To fulfill the mandate of this study, the fire programs in Alberta, British Columbia and Ontario were consulted as well as a base within the National Park fire program and an urban fire department operation.

6.1. The Story of a Fire

Each organization was interviewed to determine how they could tell their own "story of a fire". Within the different approaches a number of best practices can be identified. In the context of the fire story, the following five areas provide a structure to the delivery of each story.

6.1.1. Who

A contact system is at the heart of each system and provides a base to build from. This type of system comes under various names or descriptions (IE. Personnel Information Management System, Personnel and Resource Tracking System, FIRES Stakeholder System) but the core data is the same. Any person or entity that has a relationship to the fire program is tracked in this system to ensure that other related activities whether present or future can occur. This could be information items such as: crew tracking, time card entry, expense tracking, CVA data tracking, electronic log keeping, training, ICS deployment, contract management, document management and much more.

Deployment of this type of system will ensure an integration point for other systems and will immediately provide support to other "who" related systems including the ones stated above. The "story" always has to have characters.

Currently, FMFPB employs a contact system within the Career Development Management System. Functionality is limited to use for a training repository. Various implementations of an organizational database exist within systems like AvMan, but a central repository does not exist. Other peripheral processes within the fire program exist which could mature and grow if a central contact and organizational database existed (IE. Time sheets, S4 processing, CVA processing, training records, authorization processing and electronic signatures).

It is important to note that some fire programs have chosen to record, in detail, the real time movements of their fire line staff without the use of GPS technology. This is a resource and communications intensive process which can not be supported by the current FMFPB organizational structure.

6.1.2. What

This is the largest segment, in the context of information management, of the fire story. People, planes, fire fighting equipment, light equipment, heavy equipment, consumables, aviation fuel, fire fuel, values and fire weather make up some of the vast number of components that help tell what happened and what was involved in a fire.

Most or all of the fire programs interviewed have identified the following items as important to being able to recreate what was impacted, or what provided impact, to a fire suppression effort. **This means not only tracking information, but assigning it to a fire if applicable**.

- Electronic personnel tracking to the basic level of a crew.
- Electronic aircraft tracking (location). Saskatchewan has begun to move down this path.
- Aircraft contract tracking and maintenance.
- Inventory tracking and maintenance including consumables, fire fighting equipment, light equipment and heavy equipment.
- Aviation fuel management.
- Fire detail tracking including initial reports, location, progress (situation reports), weather and SFMS details throughout the burn, spatial burn information and progress, fire cause and investigation results, costs associated to the fire fighting activities and supporting documentation.

Each approach, although similar, had variations on how this was accomplished. Systems like FIRES provided a central store of data and a central application to save it in, but the data was disparate and was pulled together using reporting tools.

The Province of Ontario's DFFOS tool provides the fire details portion and then relies on PIMS, E-LOG, A/CIMS and Dispatch to provide the remaining data. All data is brought together again through reporting.

PRT, the "white board", Dispatch and the Aviation Management System provide the required information. Although some reporting is done via conventional reporting tools, Dispatch is maturing into a Dashboard type portal to present information.

Two additional notes are important here. First, full integration is a goal of all the fire programs reviewed, but none have achieved it. BC's dashboard approach is the closest. Secondly, although all three of the provincial bodies reviewed used IMIS as their inventory product, none had successfully integrated it with their other systems or appeared to see the value in this move.

6.1.3. Where

Where a fire burns is an important aspect for many reasons. It may be impacting values which could include human life, communities, infrastructure, timber or environmentally sensitive items. Spatially tracking a fire and the resources assigned to a fire can help prioritize the strategy and approach to wildfire containment.

All of the fire programs interviewed for this study have a spatial component to tracking fires and associated resources. A GIS database is maintained and provided to those resources that need maps or topography in executing their program. Additionally, each of the fire programs has adopted a tool called Dispatch from Selkirk Systems in Victoria, BC. This tool is used to spatially track aircraft and integrates with other systems to display fire locations and resources at varying degrees. Most locations are also using it to display SFMS (geospatial data) and weather data as a "layer" to put these tracked items in context of the hot spots when doing preparedness planning.

In the context of Values at Risk, the majority of programs interviewed still relied on local knowledge to put a fire into the context of local values and as such, to set priorities for initial attack. Ontario, Alberta and the regional portion of BC's fire program indicated a reliance on local knowledge. BC's provincial group incorporated two (2) tools for VAR support:

- A direct link to the Land Branch database allowed an instantly displayed layer, within their dispatch system, to view registered land dispositions.
- A VAR database has been created which applies a weighting system to a grid that has been applied to the province. Each grid section has a weighting based on 7 categories including social, demographic and forestry based categories. Each ministry or area of authority for each category is able to put a value on the grid from 0 to 100 and the VAR then generates a value for use by the provincial fire center for allocating resources.

Saskatchewan has incorporated a detailed VAR approach which is not yet completed and may present a challenge to maintain over the long term. The primary reason the other provincial programs have not pursued this path is due to the number of values they would have to track and the expense of maintaining the data.

6.1.4. When

Compiling a timeline for a fire is important when reconciling the activities of the fire and when preparing for an investigation in a human-caused fire. To aid in this process, a number of tools are used by all of the fire programs to ensure an adequate chronological picture is available.

- Recording all activities related to a fire is necessary in order to act as supporting documentation and evidence. Within all programs, dispatchers and fire clerks log radio chatter provided by ground and air crews. In Saskatchewan this is a paper based process. In BC and Ontario, this is an electronic process using an e-log tool. In Alberta, a combination of both is used, depending on the activity. For example, the process around air tanker requests is logged electronically where as flight check-in points and observation tower check-in points are paper log based.
- Having a central fire system which links all fire activity provides a central repository to record this chronology. BC has PRT, Alberta has FIRES, Ontario has DFFOS, the National Parks have PFIS and Saskatchewan has DFFIS. Unfortunately,

Saskatchewan's DFFIS provides "last known state" information only, not a chronological history of each fire. **Each jurisdiction is in a different state of integration, but all have identified the need to integrate their systems.**

- Situation Reports and Preparedness plans provide a daily snapshot of the fire program's fire season. All programs utilize similar processes with the programs with more mature and sophisticated systems having a higher level of integration to generate these reports and plans.
- Historical weather and fire weather data provide frequent snapshots of the weather in relation to fire activity and fire suppression activity within a fire season. All programs store and value their weather and fire weather data. Weather forecasts are generally recorded for disbursement to other staff in the program and in some cases, with other ministries and agencies.

6.1.5. Why

Gathering the reasons why a fire happened is important for determining how to prevent them later, and possibly how to fight similar fires in the future. All aspects of weather are tracked in various ways and from various sources by the other jurisdictions. This includes lightening, weather and weather parameters used to determine fire weather indices.

Each jurisdiction incorporates some sort of fire investigation program and maintains a system to process "man caused" fires. This generally starts with the reporting process where a significant level of detail is recorded and maintained around a smoke report or fire report. All jurisdictions record a high level "human cause / lightening cause" categorization, but most jurisdictions have added more layers beyond human cause to try and capture a better picture of the fire. This may be as detailed as recording the method or intent of ignition (arson, accidental, recreational vehicle caused, matches, etc).

Alberta, BC and Ontario have a process by which fire investigators, record and report their findings into the central system and attach those findings to the original fire. If the fire cause or category changes, this change is made to the main fire record and is then audited. A document management approach is used to store evidence, files and photo's attached to the fire. All available information is pulled together to generate a picture of why the fire occurred and why the results were what they were.

Of equal importance is to know the human aspect of a geographical area. Knowing the social situation for a specific area; being able to draw on previous fire statistics for an area; knowing what previous education or program efforts have been executed in an area; having access to demographic data regarding human population and activities; all of these can help ascertain causes or factors in human caused fire situations.

Of note, no jurisdiction has started to use an electronic ICS framework, although some jurisdictions are looking at this with the goal of recording

decision points and ICS processes as well as supporting the standard ICS forms throughout a large fire. Documentation gathered and tracked through this process would play well into recording some aspects of the "why" of a fire.

6.2. Information Systems Integration

As mentioned above, integration is on most people's radar and has either been part of an ongoing strategy for information systems development or has recently made it into the shared goals and objectives of the various organizations interviewed. Integration, in the context of information systems, can mean different things and prior to discussing integration best practices, it is important to be familiar with what they are.

- Data integration translates into the sharing or connecting of data at the lowest possible level. Having a person or organization recorded once with a unique identifier, and having all other systems reference this data, is an example of data integration.
- Security or access integration, commonly known as "**single sign on**" (SSO) is the elimination of numerous accounts and access points and the implementation of a single point where an individual goes to access a number of systems. The systems do not need to be on the same platform because the SSO integration point does the interpretation of credentials to each system.
- System or platform integration can take two different forms. One form is to make all the systems and applications operate under the same environment (IE. Oracle). This approach is increasingly hard to do. The other form is to put a meta-layer on top of a number of unlike systems and present the needed information from these systems in one common way. This is the idea behind "**business intelligence**" and this is rapidly becoming the most effective way to achieve these outcomes in businesses of all types across the world.

Ontario has a specific plan which forms, what they call, the Fire Management Information System (FMIS) Workbench. This model ties together their four (4) primary systems (personnel data, fire and weather data, inventory and equipment data, and aircraft data) to the corporate and shared data maintained within the central government. These systems are further categorized and a plan is built around these categories to determine which systems are required "now", which are required "today", which are needed 'weekly", "seasonally" and finally long term or "strategically" for current and future processes. Ontario's approach utilizes:

- Data integration
- The first form of platform integration (common development platform)
- To a degree, a single sign on approach

Starting in the late 90's, Alberta initiated an information system strategy which would result in the Fire Information Resource System (FIRES) system. FIRES was intended to be a one-stop-shopping approach to information management system delivery. As the system grew and developed, many aspects of the fire program were modularized within this system. Aviation, contracts, heavy and light equipment, fire details, resource requests, drop reports, fuel cache information, costing information, prevention information and materials, survey details, personnel tracking, training details and curriculum, weather data and a variety of reporting tools. Additional tools provide inventory functions and flight following / tracking functions. Alberta's approach appears to utilize:

- To a degree, data integration
- The first form of platform integration (common development platform)
- To a degree, a single sign on approach

British Columbia has had an aggressive system development program for a number of years and has aligned itself with a private company to provide R&D services to the program. As a result, BC's information systems have evolved quickly and with significant complexity. Currently, they have a significant amount of functionality within their proprietary Personnel and Resource Tracking system which manages fire details, personnel details and non-personnel resources. Additional systems for spatial based flight following, a white board for data presentation and maintenance, and an inventory system round out the system offerings. British Columbia's approach appears to utilize:

- Data integration
- To a degree, the first form of platform integration (common development platform)
- The second form of platform integration (business intelligence via a whiteboard)
- To a degree, a single sign on approach

Adequate details on the National Parks system integration practices were not available. From a demonstration of the Parks Fire Information System (PFIS) it could be established that they incorporated:

- A level of single sign on integration
- The first form of platform integration (common development platform)
- The second form of platform integration (business intelligence)

Adequate details on the City of Saskatoon Fire Services integration practices were not available. A demonstration of the their systems indicated the use of Commercial Off The Shelf software (COTS) and third party software to view and respond to other agencies (Ambulance) information. The COTS system implied a certain level of internal integration, but no link existed between that system and the Ambulance agencies information.

6.3. Strategic Planning

In the context of strategic planning, two lessons or best practices can be garnered from the jurisdiction research that was done for this project.

- **A strategy and vision is required before a major information management initiative is executed**. This strategy has to not only consider the technical goals of the organization, but also the support model that will be implemented, the users who will be engaged in the system and the complex geographical diversity that the system needs to operate in. Without exception, each external provincial group interviewed (Alberta, B.C., Ontario) missed one or all of these items when they were building their strategy and are now back-filling or re-designing their systems to accommodate it. For example, BC has built a robust system with intensive use of graphics and spatial data. Unfortunately, indications were that it fails to run in a usable fashion when on a Satellite system. Attempts are now being made to create a portable version. Examples similar to these exist for other jurisdictions.

- Even though you may build a strategic document and have a clear vision, the strategy may fail or fall short of the goal. ***It is important to continue to review the strategy as your plan unfolds*** to ensure that opportunities are not missed, that bad paths which are hard to come back from are not taken, and that adequate time is given to ensure all of the business lines have a chance to provide input.

6.4. Spatial Systems

If one theme can be assembled from the various information management based practices reviewed during this study, it was the strategic movement toward spatial data and spatial data representation. This is not confined to just the fire programs, but to all of the agencies interviewed. **More and more, spatial data is what is providing the base supporting tool set and resource set for environmental and operationally based organizations**. Many aspects of the "who, what, where, when and why" categories can be presented via a spatial system. Text is informative, but pictures are worth a thousand words and with the movement toward business intelligence and dashboard delivery of information, spatial systems make up a center point for information storage and presentation.

7. Recommendations and Options

A number of recommendations can be put forward based on the various system information gathered throughout this project, the interviews with FMFPB staff, other Saskatchewan based agency staff, extra jurisdictional staff and existing knowledge of enterprise level information management systems.

7.1. Realize Integration and Partnership Benefits

7.1.1. Internal to FMFBP

Discussion

Integral to this study, and implicit in the title of this project, is the need to integrate, at the appropriate levels, the various tools and data that are required to manage the fire program. This discussion has been placed first within the recommendations as it should provide guidance on how the following recommendations are acted upon.

Recommendations

- Tools chosen or developed to perform functions and store information must be reviewed at the Business Analyst and Architect level to ensure that it will integrate and share appropriately before it is chosen and implemented.
- Platforms chosen must support a high availability model for mission critical usage.
- Essentially, the chosen systems must not duplicate work done by another system; they must reside where their data can be integrated or connected to other systems and they must be available on a platform which integrates with existing systems.
- Systems chosen and developed must adequately store information that is currently held only within the FMFPB brain trust and which will no longer be available once long term members retire.
- The data within the system must be in an open and accessible format, and not located in a closed proprietary database.
- Single Sign On and Service Oriented Architecture Principals must be considered and applied.

7.1.2. External to FMFPB

Discussion

Similar recommendations in regards to the selection of tools that are external to the fire program but directly affect the fire program can be made. Additional recommendations can be made in regard to sharing data and realizing opportunities.

Recommendations

- Sharing of data should be considered between the FMFPB and external agencies when information systems or information flow are discussed in the context of the geographical areas which are important to FMFPB. A series of contacts and protocols should be established to ensure this is done. Additionally, when systems are designed and integrated within the fire program, external agencies should be consulted to ensure that opportunities are realized. Specific findings based on interviews turned up a number of opportunity areas for sharing data:

- Crown Land Management System (CLAMS) – the development of the CLAMS system by Lands Branch may have a significant impact on how FMFPB approaches any Values at Risk (VAR) processing and system development. FMFPB should be included in the CLAMS design and implementation project.

- Highways data – data collected concerning road access and conditions can be important to FMFPB operations. Highways maintains a significant amount of spatial data covering the area FMFPB performs many of its operations. Additionally, FMFPB staff in the field may be able to feed similar data back to the Ministry of Highways to ensure road access information databases are kept up-to-date.

- Resource exploration – exploration camps located throughout the north become Values at Risk during the fire season. Currently, no clear way of communicating these locations to FMFPB exists.

- Timber values – ad hoc processes exist to share this data between Forestry Branch and FMFPB. Integration of spatial databases would greatly improve accuracy and efficiency. At a minimum, layers of this data could be exported and imported between the GIS databases.

- Plantation data – no processes exist to share this data between Forestry Branch and FMFPB. Integration of spatial databases would greatly improve accuracy.

- Burn data (fires, prescribed burns) – no formal processes exist to share this data between Forestry Branch or the Ministry of Tourism, Parks, Culture and Sport Parks Service Branch. All parties would benefit greatly for planning, modeling and archive purposes.

- **Weather data – the Ministry of Highways, the Ministry of Tourism, Parks, Culture and Sport, the EMO, the Ministry of Health, the Ministry of Social Services, various representatives from Industry and Prince Albert National Park all expressed an interest in receiving or viewing weather data and/or forecasts from FMFPB**. Implementing a web portal to distribute this information would be of great value to all of these groups. For example, The Ministry of Highways will only lay pavement when conditions are proper. Restricted or non-existing weather forecasts in the north prevent proper planning for these activities. FMFPB already generates these forecasts.

  - Aircraft contracts – currently FMFPB assists Forestry Branch and the Ministry of Tourism, Parks, Culture and Sport in acquiring aircraft contract time for projects. This is done in an adhoc fashion with limited consideration for efficiency. Putting up an electronic form for requesting services which are handled by FMFPB would increase the efficiency and tracking of this process.

  - Training – Forestry Branch and the Ministry of Tourism, Parks, Culture and Sport both indicated that they would like to be part of an initiative which shares training opportunities between the branches and agencies when appropriate. Currently, any opportunities are identified only when word of mouth reaches the right ears. Having a shared training area, possibly on ENVIRONET, would provide a place to identify shared opportunities.

- Spatial data is, for the most part, stored within a common platform within the Ministry of Environment. This platform is ArcGIS with a supporting Oracle database. Taking into consideration the performance of systems, the accessibility of data over existing infrastructure and any licensing issues, an initiative to share this data should be pursued to uncover any opportunities to allow government agencies to tap into existing repositories of data. At a minimum, protocol and processes for providing frequent updates of information to designated recipients would show great value. IE. Each time a prescribed burn occurs, data from the Parks could be sent to FMFPB to update their burn area and size database. Candidate information includes:

  - Detailed supporting Values At Risk data accumulated by FMFPB.

  - Prescribed burn data.

  - Plantation and timber data.

  - Highways data.

  - Land Branch data.

  - Flight Following data and supporting technology (Resource Tracking).

7.2. Vision and Strategy

7.2.1. Information Technology Support

Discussion

For any IT strategic plan to succeed, the underlying support mechanism for any initiatives in the plan must be defined. In the context of FMFPB, when systems are purchased or built, integrated and implemented, it must be known how much support can be anticipated and at what level this support will be delivered.

Recommendations

- Define sufficient roles within FMFPB, additional to the Technical Transfer Specialist roles, who can act as subject matter experts for the systems and specialized infrastructure that must be maintained within the fire program. These roles will act as Tier 1 and Tier 2 application and infrastructure support for FMFPB staff that need assistance with Fire Program information systems. Ideally, these staff will be involved with any new system implementations from the start. T**hree application specialists should be able to provide this assistance, on a full time basis, to FMFPB**.
- Define the relationship with ITO to continue to provide hardware support and application hosting services. Further defining this relationship with ITO may result in FMFPB staff gaining access to ITO change control software as well as acquiring ITO specific training and certification to ensure ITO expectations are met.
- Discuss and define options around mobile infrastructure support for remote fire bases and mobile command posts. If a set of guidelines can be defined with ITO for accessing the GOS network, the Fire Program may be able to use other options for satellite connectivity as long as security protocols are met using VPN technology.
- Identifying a specific resource or role that has the adequate amount of time to act as a liaison between FMFPB and ITO.

7.2.2. Business Analyst Support

Discussion

The role of the Business Analysis has recently gained recognition through the efforts of various organizations. These companies and groups have seen the need for individuals to play a liaison role between managers, policy makers and business professionals who has a need for solutions and the designers, implementers and even users who will be providing the solutions. A unique set of information gathering skills and implementation skills are required to ensure the request is realized.

Recommendations

- Use BA staff to gather requirements and define the needs of the business either for new information management solutions or modifications and enhancements to existing solutions.
- BA staff should be knowledgeable about the current FMFPB business processes.
- Staff can be internal to FMFPB or external to FMFBP as MOE staff or consultants.

7.2.3. Architecture Support

Discussion

In the context of information management, the role of the architect has traditionally been used to ensure a solid and consistent foundation for solution development was put in place and maintained. Ensuring that any new solutions or enhancements to existing solutions are in alignment with the organizations vision and strategy is important to ensure the structure is maintainable, integrates well and is not a duplication of existing functionality.

Recommendations

- Establish someone in this role for FMFPB. This may be a dedicated or shared role, but will require at least 50% of someone's time.
- Resource can be internal to FMFPB or external to FMFPB as MOE staff or a consultant.
- Initiate strategy and vision discussions centered on information management to ensure a documented plan is put in place with which the architect can make and defend decisions related to information management solution implementation. This can be a specific document highlighting preferred technology and preferred methodology.

7.2.4. GIS Infrastructure

Discussion

As already indicated above within the discussion on external partnerships, GIS information is an important area to consider when speaking in the context Environment in general. It is important to consider GIS when formulating any vision or strategy within the Fire Program as this technology delivers many of the existing decision making tools at the Branch and has the potential to deliver many more. To do this effectively from a development and service aspect as well as from a maintenance point of view, the GIS environment requires a strategic look.

Recommendations

- Review the MOE ESRI platform in the context of what FMFPB needs to deliver and also in the context of what can be delivered with the partners discussed previously.
- Ensure the platform chosen allows for direct connectivity to the MOE ESRI database, the current MOE standard.
- Based on currently available information and on the current MOE ESRI standard, it is recommended that FMFPB begin developing new GIS tools on the ESRI GIS stack using Java and C# tool sets to deliver applications. The Dispatch system provides a starting point to build upon using this stack.

- Over time, current decision support tools can be redeveloped into this standard as part of the standard software development and re-development life cycle.
- Existing FMFPB tools that may be impacted by this recommendation directly or indirectly via new integration points include:
    - AvMan
    - CDMS
    - DFFIS
    - ENVIRONET
    - FEAST
    - Fire Model
    - RTS (Dispatch)
    - VAR
    - Weather Systems and data
    - Science Systems including Pandora, Pegasus, Prometheus, PUCK, SFMS, FOP, LCHFM

It is important to note that tools, specific in nature to the business of Fire Management, often are developed using the Open Source community of tools. In an effort to encourage and foster continued research and development for Fire Management decision support tools, a development platform utilizing these tools should continue to be made available to FMFPB so that these tools can be installed, assessed and evaluated.

7.2.5. Business Process Improvement

Discussion

In observing general information management within the Fire Program, a number of recommendations can be made to improve tracking and information flow.

Recommendations

- Use simple tracking within documentation.

- Implement a document management application which could be integrated with a central Integrated Fire Management Information System. This could make policy and other related documents available, as needed, to Fire Program staff and allow for the attachment of documents to fire reports.

- Implement an Incident Command System (ICS) application to support the ICS process. This would allow for standardization of documentation as well as integration of ICS documentation to a central Integrated Fire Management Information System.

7.3. System Re-development and Enhancement

A significant number of system re-development and enhancement projects have been identified based on the findings of this study. A three phase approach is recommended to realize these projects and implement them with as little risk as possible to the Fire Program.

Phase 1

Phase 1 incorporates 2 core systems to ensure that follow-on work can integrate directly into these systems. Please see figure C.1

7.3.1. Integrated Fire Management Information System (IFMIS) replaces Daily Forest Fire Information System (DFFIS)

Discussion

The current DFFIS application no longer provides suitable performance in two (2) important areas. One, it is technically out of date. Two, it does not perform the functional duties expected from a core Integrated Fire Management Information System.

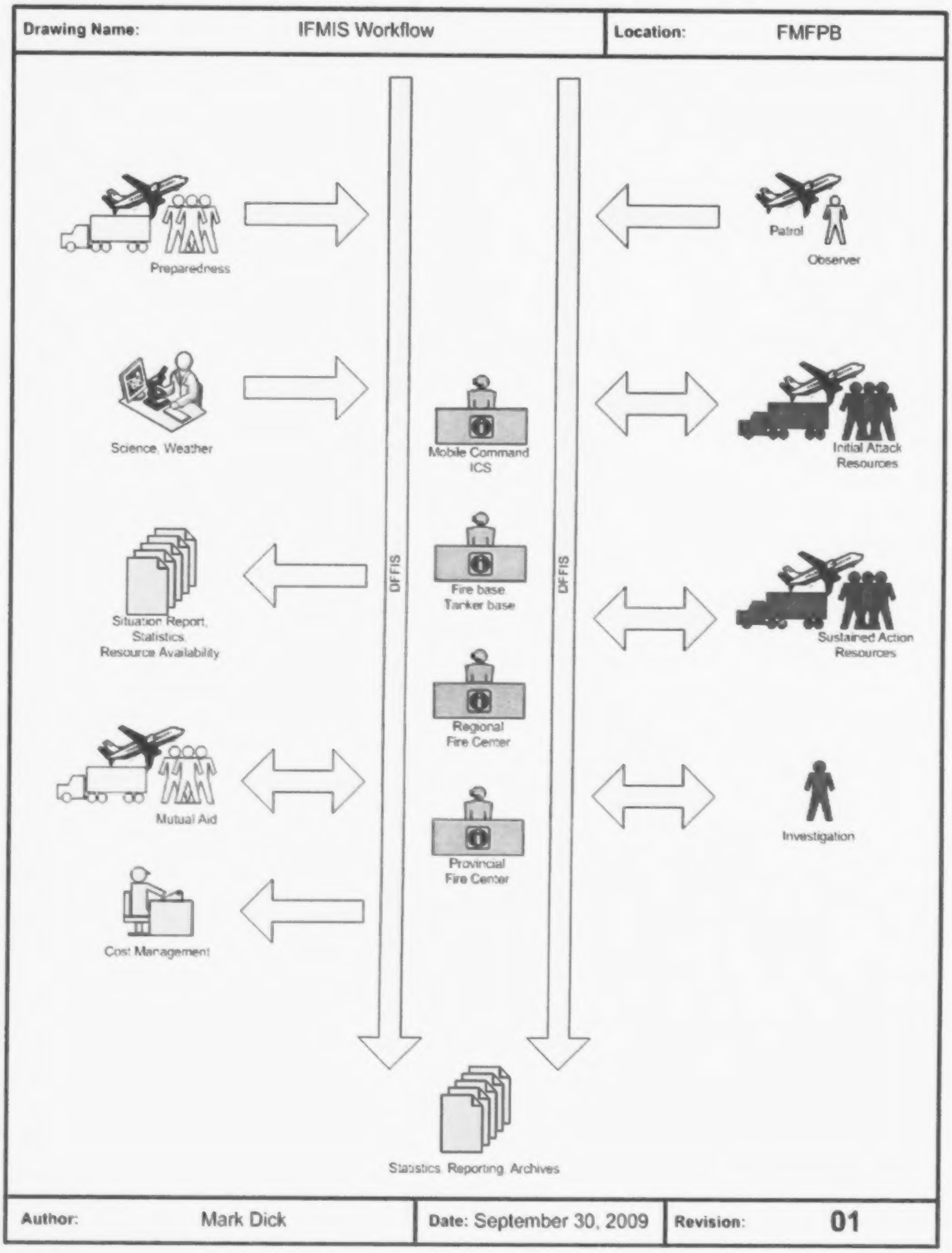
Requirements

Business Process	Comments
- Receive and track smoke reports and fires. - Receive and track confirmed fire related information including cause, class, location and fire progression. - Track fire related resources including aircraft, heavy equipment and personnel. - Track investigation information, supporting documentation and results. - Track daily non-fire specific information including situation reports and preparedness. - Track Fire program lead community and general education based events (IE. fire smart	A number of business processes need to be included in IFMIS based on existing functions delivered from DFFIS as well as best practices identified in this report.

program delivery and fuel management programs). - Track mutual aid based information (crew mobilization and demobilization, air support, quick strike, etc). - Track all resource requests via a lightweight electronic forms process (IE. Air tanker requests, personnel requests, etc). This process must integrate with a contact system to incorporate an authorization matrix to allow for electronic approvals. - Track required cost factors and cost model data to meet required cost projection functionality. - Implement a decision support portal with links to weather, science and modeling applications which are needed for operational support. - Implement a push procedure to send data to a public or Intranet based web site (publish statistics). - Implement a security access model to control user access to the application. - Implement a full audit of all data inserts, updates and deletes.	
Integration	Comments
- AvMan via fire number / name (contracts, air based resources). - CDMS and associated demographics data via fire number / name (personnel allocation, authorization). - FEAST via fire number / name and	The new system should center on integration to existing system through a common key. Information already stored and processed in an existing system should not be duplicated in IFMIS.

location (equipment) - Flight Following / Resource tracking through the Selkirk Dispatch system via fire number / name and location (spatial representation of all applicable data). - GIS database via fire number / name and location (fire locations, sizes, overlays, etc) - Values at Risk database via fire number / name, time and location. - Scientific models via fire number / name, time and location. This would fit within the IFMIS decision support portal. - Spatial Fire Management System data via time and location. This would fit within the IFMIS decision support portal. - Weather and fire weather data via time and location. Spot forecasts may also be by fire number / name. This would fit within the IFMIS decision support portal. - ENVIRONET and Government Website via timestamp (data summarized based on frequency of reporting).	
Functional consolidation	Comments
- Information, constants, calculations and processes to support a Fire Costing Model and Total Cost Summary should be implemented within IFMIS in the cases where this type of information is not present, or will not be present, in the host systems (IE: Helicopter rates are already in AvMan and should not	Although IFMIS can support the back-end data for a Fire Model and also provides a long lasting repository for generated models which can be referred to later, it should be flexible enough to extract into a spreadsheet for manipulation and portability.

be duplicated in IFMIS). - Central electronic logging of events (tower check-ins, aircraft check-ins, fire event notes). - Dashboard style delivery of branch wide data including statistics, trends, situational information, preparedness plans, etc. - Report style delivery of frequency based fire data and summary data.	
Technical Requirements	Comments
- Application and database must be compliant with ITO standards for hosting. Licensing should be considered. - Application and database must meet minimum performance standards, as determined by a designated architect, while operating over a satellite link. - Use of a technology that supports an electronic form based request and response system is recommended.	
Future Considerations	Comments
- Integration with an ICS framework software via fire number / name. - Integration with a Heavy Equipment database via fire number / name. - CLAMS database (out of scope). - Forestry database (out of scope). - Highways database (out of scope).	Currently, a number of applications do not exist. Some applications are in the recommendations for development in a later phase. Some are out of scope for the phased approach.



Drawing Name: IFMIS Workflow
Location: FMFPB

Preparedness
Patrol
Observer
Science, Weather
Mobile Command
ICS
Initial Attack
Resources
Situation Report,
Statistics,
Resource Availability
DFFIS
Fire base
Tanker base
DFFIS
Sustained Action
Resources
Regional
Fire Center
Mutual Aid
Provincial
Fire Center
Investigation
Cost Management
Statistics, Reporting, Archives

Author: Mark Dick
Date: September 30, 2009
Revision: 01

Options

There are three options for replacing DFFIS and meeting the stated requirements. It is assumed that a ***Requirements Phase*** is essential to be executed no matter which option is chosen.

Option	Notes	Estimated Cost
1. Purchase a COTS package developed for generic Fire Management. There are a number of packages available including some Canadian built options (IE. FDM).	These systems have been built for urban interface fire organizations and would need considerable customization to be useful to the FMFPB.	$500,000 to $1.5 million for licensing, customization and implementation.
2. Implement the Personnel and Resource Tracking (PRT) system developed by Selkirk Systems for BC Forestry.	This system has been custom built for use in the BC Fire Program and is actively being internationally marketed to other fire programs. PRT is technically advanced, modern and has been built assuming a high level of interaction with the operators. The BC program has committed a high level of resources to the applications operation.	There are no licensing fees associated with PRT. Implementation of base system without integration - $100,000. Customization and integration - $300,000.
3. Custom development of a new IFMIS system.	Each of the Fire Programs interviewed during the course of this project used a different core fire system. Different commitment to resources, different access to trained resources, different supporting applications and different program structure resulted in different approaches to these systems.	$400,000 - $700,00 for development, implementation and integration using existing government technical environments.

Recommendations

- Develop the technical and functional specifications for a new custom developed core Forest Fire Information System (option 3). This new system should be developed to model the "story of a fire" scenario as described in the **best practices** section of this document.
- Develop and implement this new IFMIS application and database with integration points exposed.
- Perform a data conversion project to move clean and reliable information into IFMIS.

7.3.2. Demographic and Organization Management System

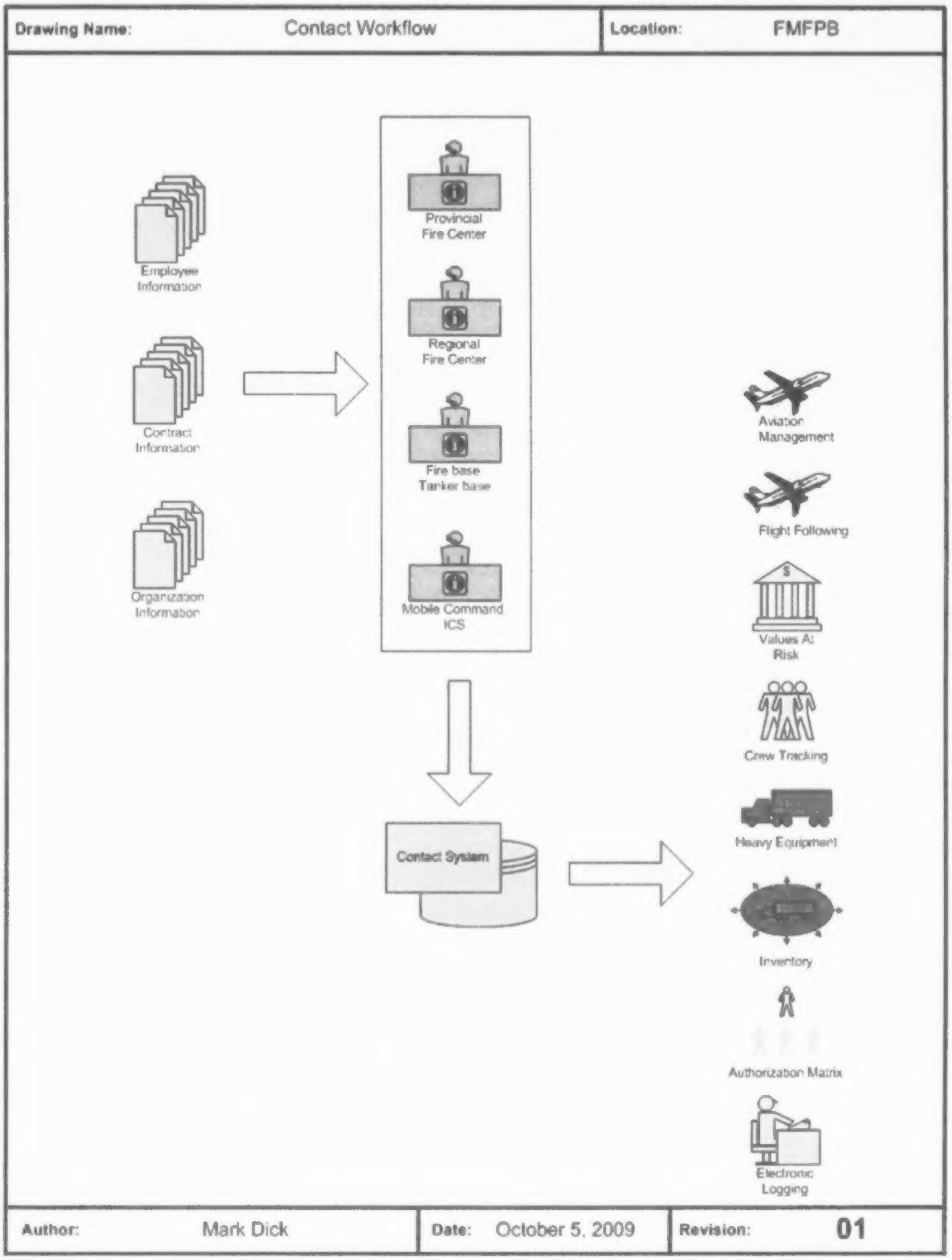
Discussion

FMFPB does not currently have a central repository for demographic and contact information. To support required processes, FMFPB must maintain a significant amount of this information for employees, vendors, service providers, contractors and educational affiliates. Currently, this is being achieved with multiple non-integrated applications, spreadsheets and paper throughout the program.

Requirements

Business Process	Comments
- Store address, phone and other identified demographic information for all individuals that are affiliated with the Fire Program. - Store locations, contacts and other identified demographic information for all organizations that are affiliated with the Fire Program in the context of the services provided. - Implement unique identifiers for contacts and organizations to comply with privacy legislation. - Implement a full audit of all data inserts, updates and deletes.	A number of business processes need to be included in the demographic and organization database based on required functionality as well as future considerations.
Integration	Comments
- AvMan via contact ID and organization ID (contracts, pilots). - Flight Following / Resource tracking through the Selkirk Dispatch system via organization ID (contract companies, pilots). - Values at Risk database via contact ID and organization ID. - IFMIS via organization ID and contact ID (crews, ICS teams, electronic logging, authorization	The new demographic and organization database, when configured and populated, will become central to ensuring this data is current and available for use.

matrix identifiers for electronic forms processing)	
Functional consolidation	Comments
- All demographic and organization data and required functionality currently maintained in AvMan, disparate training databases and spreadsheets should be reviewed and included.	
Technical Requirements	Comments
- The existing system is on a compliant format based on observed ITO standards. - Performance standards must be considered, for remote use, as this database will be used extensively over remote connections.	
Future Considerations	Comments
- Time sheet tracking and processing. - Expense tracking and processing. - CVA tracking and processing.	A number of existing processes can be improved and made more efficient by tying them to the new demographic and organization database.


Drawing Name:
Contact Workflow
Location:
FMFPB
Employee Information
Contract Information
Organization Information
Provincial Fire Center
Regional Fire Center
Fire base Tanker base
Mobile Command ICS
Contact System
Aviation Management
Flight Following
Values At Risk
Crew Tracking
Heavy Equipment
Inventory
Authorization Matrix
Electronic Logging
Author:
Mark Dick
Date:
October 5, 2009
Revision:
01

Options

There are 3 options for create a demographic and organization database. It is assumed that a ***Requirements Phase*** is essential to be executed no matter which option is chosen.

Option	Notes	Estimated Cost
1. Leave the current CDMS application intact and use the contact and organization pieces as is.	This is a viable option. The CDMS application has been built to support a specific career development process and the current contact and organization portions have been built within this process instead of external to it. This presents a risk in terms of how the CDMS system would integrate with other systems.	$0. All integration efforts from other systems would be costed as part of those efforts.
2. Purchase a COTS based system.	A number of software options are available for demographic and organization information management. These are as small or as large as the customer desires. A medium size solution would satisfy FMFPB needs.	$80,000 – $1 million for purchase, implementation and integration.
3. Extract and enhance the current contact and organization data base and application from CDMS to create an independent module.	This option would allow for the re-use of the contact portion of the CDMS system but would allow for enhancements to ensure efficient integration and separation of functions.	$40,000 - $80,000 to separate the contact and organizational functionality from CDMS and exposing it for integration using an SOA approach.

Recommendations

- Develop functional and technical requirements for a demographic and organization database that meets the needs of the Fire Program. This must include consideration for integration points, security, and privacy legislation regarding the storage and handling of personal information.
- Review the existing demographic and organizational component of CDMS and enhance the current database as needed to meet the requirements (option 3).
- Develop and implement the documented enhancements to the application with integration points exposed.

Phase 2

Phase 2 provides includes the logical next steps to build on the new IFMIS system and demographic and organization system. Leveraging the new central fire data repository, spatially related data, AvMan and the heavy equipment processes can be further developed and integrated. Please see figure C.2.

7.3.3. Dispatch – Flight Following, Spatial data consolidation, E-form integration

Discussion

FMFPB is currently using the Selkirk Dispatch system to track contract and NAO aircraft while they are within provincial borders. The current system is being hosted for FMFPB in British Columbia and is accessed remotely via a desktop Java application. This remote model has caused some logistical issues, communication issues, and a significant amount of redundantly stored information to be shared with the host site. Additionally, it has not provided an opportunity to consolidate spatial data within FMFPB and MOE.

Recommendations

- Acquire the newest version of Dispatch from Selkirk systems and implement the product on ITO servers under MOE management and direction. A similar model is currently and successfully being used by Alberta's Wildfire Program.
- Implement Dispatch as the central source for spatial data. This will mean adding layers into Dispatch for Saskatchewan map data, decision support tools (PUCK, FOP, etc) and spatially enabling all weather related data (spatial fire management system data).
- Enlist Selkirk to integrate Dispatch to IFMIS for fire data plotting (fire locations, statistics, etc) as well as spatial based electronic forms.

Technical Considerations

- Migration of SFMS, science and decision support tools to a central spatially based model will require significant effort. Currently, these tools are developed and hosted across a variety of technical environments including PostGIS, MapServer, ArcGIS running on Microsoft and Linux operating systems.

7.3.4. Aviation Management System (AvMan)

Discussion

The introduction of electronic forms for resource requests and data submission will have an impact on the AvMan system (integration with available contract aircraft).

Additionally, there are pools of information that exist at FMFPB which relate directly to AvMan and could be included in the central AvMan database. These items can be combined with a needed technology upgrade enabling better and more efficient implementations of the enhancements and also providing long term stability and maintenance benefits.

Recommendations

- Migrate the current AvMan application from the older Visual Basic platform to a modern .NET platform (VB.NET or C#).
- Create a requirements document to identify any needed system modifications to integrate with IFMIS, to support the electronic forms functions and to integrate with the demographic and organization database for contract information support.
- Develop and implement the requirements identified.

Technical Considerations

- AvMan has been identified as stable from a functional point of view, but is in need of navigational and structural enhancements and a platform upgrade. To ensure a stable and supportable application in the future, this system needs a platform upgrade following Microsoft's suggested migration path for Visual Basic applications (VB.NET or C#).

7.3.5. Values At Risk (VAR)

Discussion

Primarily an operational decision support tool, the Values At Risk database has huge potential for Fire Management. It is currently deployed as a spatial tool available to all FMFPB employees, but through an aged GIS platform. It does suffer from an incomplete database and is not fully used in the field. Strategy for VAR going forward will depend on decisions made regarding the CLAMS database and application.

Recommendations

- Review the intended use of the VAR database and the Policy Framework regarding this database and develop a strategy for:
    - Operational use at the provincial level
    - Operational use at the field level
    - Completing the data within the system including the FMFPB supplemental data based on requirements and specifications for the VAR system.
    - Database update, currency and information sustainment for all categories (FMFPB specific values, LDIS or CLAMS values, partner values including SaskTel, SaskPower, etc)
    - Linkage to current operational business processes and decision trees (integration) including Risk Models (fire growth models), the WFSA

process and ICS process. Other impacts to VAR included the FMFPB spatial integration considerations discussed in 7.2.4.
    - A strategy needs to be developed to integrate with CLAMS but must also include a path in the instance that CLAMS does not become available in a reasonable amount of time.
    - Integration with the Dispatch System platform as part of the consolidation of spatial data for the FMFPB.

- Specific actions should be taken, along side the strategy discussions recommended above, that will move the current state of VAR in a forward direction:
    - A fix is required to the broken web portal which allows values to be fed into the VAR database remotely.

Technical Considerations

- A technical move to migrate the current functionality to the Dispatch based platform is recommended. As per the recommendation in section 7.2.4, this platform is consistent with the MOE ESRI standard.

7.3.6. Heavy Equipment System

Discussion

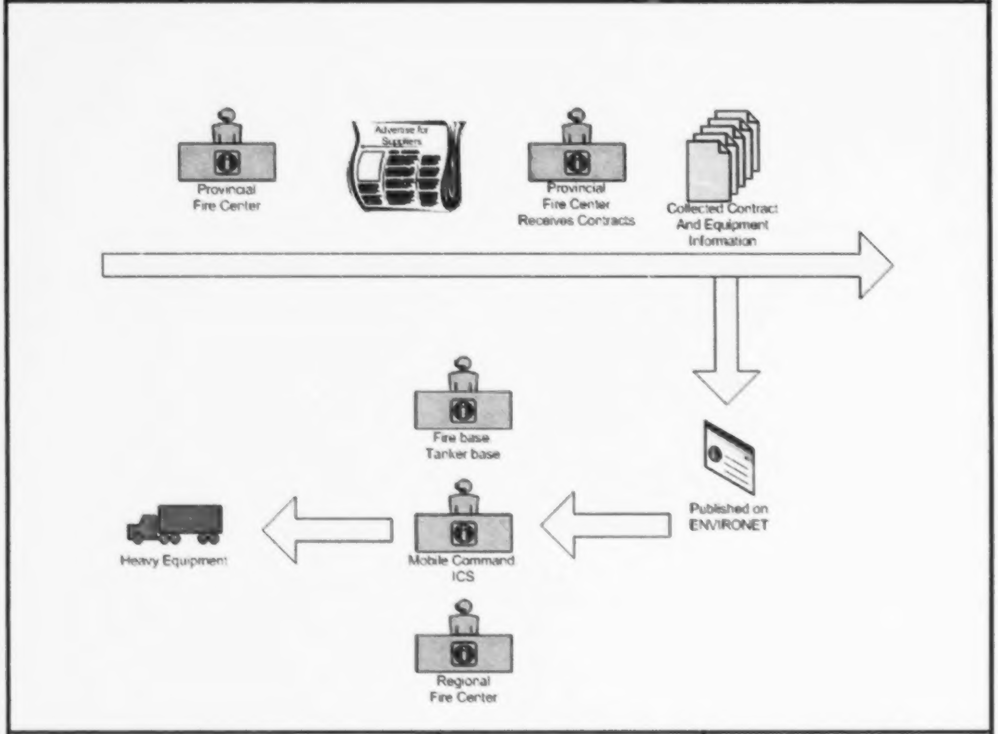
The processes required to manage heavy equipment contracts are similar to those needed for aviation contracts but with some unique differences. Information flow, operating requirements and dependent systems are such that the heavy equipment process deserves it own system.

Requirements

Business Process	Comments
- Record and track contracts with individuals and organizations supplying heavy equipment services to FMFPB. - Record and track rates required to support the contracts. - Move data from the system to Environet for FMFPB reference when in the field. This path may change depending on availability of IFMIS and Dispatch. - Ensure FMS requirements are met.	A number of business processes have been identified as required for the heavy equipment contracting process.

Integration	Comments
- Flight Following / Resource tracking through the Selkirk Dispatch system via organization ID (contract companies, operators). - IFMIS and CDMS via organization ID, contact ID or equipment ID (equipment, organizations, operators) - FMS via a data feed from the new heavy equipment system.	To ensure all the pieces associated to a fire are available to IFMIS, links from this new system to IFMIS, and from this new system via CDMS to IFMIS, must be available. This is also important for cost modeling.
Functional consolidation	**Comments**
- All current data and functionality included in FMS for recording this information, must be reviewed and implemented in this new system.	Replicating what FMS already does is necessary to provide local, accessible information to FMFPB as well as to providing the first steps in replacing FMS over the long term.
Technical Requirements	**Comments**
- Application and database must be compliant with ITO standards for hosting. Licensing should be considered. - Application and database must meet minimum performance standards, as determined by a designated architect, while operating over a satellite link. - Data must available for export to FMS.	
Future Considerations	**Comments**
- Replacement of FMS in the future.	

Drawing Name:	Heavy Equipment Workflow	**Location:**	FMFPB


Provincial Fire Center
Advertise for Suppliers
Provincial Fire Center Receives Contracts
Collected Contract And Equipment Information
Fire base Tanker base
Published on ENVIRONET
Heavy Equipment
Mobile Command ICS
Regional Fire Center

Author:	Mark Dick	**Date:**	October 5, 2009	**Revision:**	01

Options

There are 2 options for the implementation of a Heavy Equipment system.

Option	Notes	Estimated Cost
1. Develop a new application to track and support the Heavy Equipment contract process.	The processes defined are not complex, but the amount of information being tracked suggests that a system is needed.	$20,000 -$40,000.
2. Implement enhancements to the AvMan system which has similar functionality.	Changes would need to be made to a stable system which is currently managed by a completely separate group.	$20,000 -$40,000.

Recommendations

- Develop functional and technical requirements for a heavy equipment database that meets the needs of the Fire Program. This must include consideration for

integration points, security, processes involving FMS and Environet and NSS, and possible rate standardization efforts for heavy equipment contracts.
- Develop and implement the system(option 1) on a compatible platform with existing pillar systems at FMFPB.

Phase 3

Phase 1 and Phase 2 set up the primary pillars of the system including IFMIS, support for cost modeling and forecasting, CDMS, Contact and Organization databases, Dispatch and a number of decision support modules (SFMS, weather, lightening, etc). Phase 2 in particular, implements a new Heavy Equipment system, clarifies the usage of Values at Risk and lays the groundwork for delivering spatial information. Phase 3 calls for the integration of these systems with the pillar applications and fills in a number of functional gaps. Please see figure C.3.

7.3.7. Dispatch – Integration

Discussion

In phase 2, Dispatch was configured as the central tool for spatial data management. With this application filling this role, a number of other applications can be integrated with it to enable full stop shopping for spatial information delivery.

Recommendations

- Integrate the FEAST application with Dispatch to enable spatial tracking of inventory within FEAST.
- Integrate the AvMan application with Dispatch to enable controls over spatial display based on contract data.

Technical Considerations

- Translation tables will be needed in FEAST to provide a mapping path between actual location (IE. Buffalo Narrows, Prince Albert, etc) and spatial coordinates.

7.3.8. FEAST – Upgrade and Integration

Discussion

A number of small enhancements are pending for FEAST along with a platform upgrade and integration considerations to ensure it can be integrated with Dispatch.

Recommendations

- Upgrade the FEAST application to a newer version of Oracle.

- Implement process and functional enhancements to the application. This may include adding bar-coding functionality directly within FEAST or integrating it with a third party application.
- Integrate with Dispatch.

Technical Considerations

- Translation tables will be needed in FEAST to provide a mapping path between actual locations (IE. Buffalo Narrows, Prince Albert, etc) and spatial coordinates.
- Addition of bar-coding functionality will have to consider available technologies.

7.3.9. Values At Risk

Discussion

Pending a strategic review of VAR and it's roles as recommended in phase 2, it can be integrated into central location for managing spatial information (Dispatch). Additionally, it can be integrated with the pillar applications to achieve the potential of phase 1 and phase 2 enhancements.

Recommendations

- Integrate VAR with Dispatch.
- Integrate VAR with IFMIS as needed to support fire tracking, reporting and electronic forms processing.
- Integrate VAR with the demographic and organization database to attach this specific data to a value.

Technical Considerations

- None.

7.3.10. Heavy Equipment Database

Discussion

Any remaining activities in regards to developing and integrating the Heavy Equipment database can be handled in phase 3. In developing the system, some small items may need to be deferred to phase 3 to ensure other activities are completed first.

Recommendations

- Integrate with contact and organization database to support contract processes.
- Integrate with IFMIS to support the costing model implementation.

Technical Considerations

- There are no anticipated integration issues if this system is built on a standard platform.

7.3.11. CDMS and External Training Data

Discussion

A number of external sources have been identified, primarily in Excel and Access format, which hold data best suited to be stored in CDMS. As a primary strategy, training and related personnel information should be kept centrally so that employee information can be ascertained easily without going to multiple locations.

Recommendations

- Examine data in remotes sources listed in section 3.2 of this document under "**Training Database, Incident Command System certification list, NAO training database, NAO engineers training database"**.
- Specify and implement any enhancements to CDMS to support this data.
- Convert this information to CDMS and discontinue the other databases.
- It may be an opportune time to review CDMS for enabling on-line training offerings from the system.
- It may be an opportune time to review other sources of data for CDMS (Aerostudies, MIDAS, etc) based on Fire Program priorities.

Technical Considerations

- There are no anticipated integration issues.

7.3.12. Data Sharing and Distribution

Discussion

A goal of this feasibility study was to discover commonalities and connections between FMFPB and other organizations to discover potential for data and information sharing. Based on the findings from interviews, the following recommendations can be made.

Recommendations

- Any efficiency in how information, required by CIFFC, can be distributed to them should be reviewed and implemented. Much of this may happen in phase 1 as the IFMIS is developed and its dependencies are discovered.
- Based on chosen Business Intelligence tools and re-organized data used in developing IFMIS, the methods used to share data with the public should be reviewed and enhanced where possible. For instance, dashboard data based in fire

statistics could be served via web service to the government web site providing for real time fire data.

- Additionally, how data is received should be enhanced as well. Secure portals offer a smooth and efficient method of receiving data. Examples of data receiving may include seasonal exploration mine site locations.
- An Extranet environment, hosted by FMFPB, should be set up to deliver specific weather, fire statistics and operational data useful to Industry based groups and government agencies that have use for this information. Findings from this study can help guide the development of this service.
- Tighter integration with Environet should be considered which may provide similar information that the Extranet environment offers.

Technical Considerations

- Security and roles must be considered in how the Extranet and Intranet connections are set up. Any Single Sign On architecture that is put in place for IFMIS may provide a blanket solution for these needs.

7.3.13. Fuel Management System

Discussion

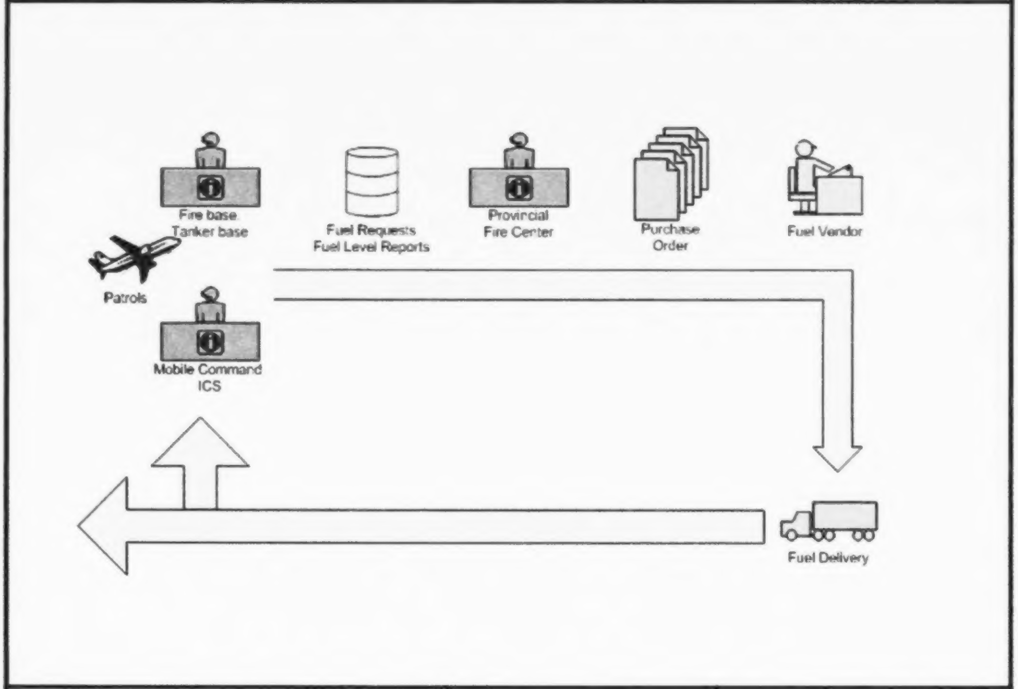
Aviation Fuel Management is a time consuming process which does not have a mature process or system developed for it. To ensure that this process can integrate into the cost management and cost forecasting requirements of IFMIS, a module must be implemented.

Requirements

Business Process	Comments
- Track aviation fuel purchases. - Track aviation fuel locations (fuel cache). - Track aviation fuel shelf life and disposal as required.	Aviation fuel purchases represent a large cost to the Fire Program each year. Tracking it in a system will allow for better visual tracking and cost control.
Integration	Comments
- Flight Following / Resource tracking through the Selkirk Dispatch system via a cache ID. - IFMIS via purchase cost (by fire or non-fire related).	To ensure all the pieces associated to a fire are available to IFMIS, links from this new module to IFMIS must be available. This is important for cost modeling.
Functional consolidation	Comments
- Current spreadsheet processes may be consolidated into this	

system. Remote access will enable those who use fuel caches to update the database or allow clerks in the field to update the database.	
Technical Requirements	Comments
- Application and database must be compliant with ITO standards for hosting. Licensing should be considered. Ideally, this can be added as module directly to IFMIS.	
Future Considerations	Comments
- NA.	

Drawing Name:	Aviation Fuel Workflow	**Location:**	FMFPB


Fire base
Tanker base
Fuel Requests
Fuel Level Reports
Provincial
Fire Center
Purchase
Order
Fuel Vendor
Patrols
Mobile Command
ICS
Fuel Delivery

Author:	Mark Dick	**Date:**	October 5, 2009	**Revision:**	01

Options

There are 2 options for the implementation of a Aviation Fuel module.

Option	Notes	Estimated Cost
1. Continue to use spreadsheets	The processes defined are	$0.

and existing structures.	not complex and could stay as is. This segregates the data from other systems at FMFPB.	
2. Develop a small module for the existing IFMIS application.	The dollar value of information being tracked and the variety of locations it is tracked at suggests that a system is needed.	$10,000 -$40,000.

Recommendations

- Develop functional and technical requirements for an aviation fuel database that meets the needs of the Fire Program. This must include consideration for integration into the cost model, cost forecasting process and Dispatch system for tracking cache locations and available fuel.
- Develop and implement the module (option 2) within the IFMIS application.

Appendix A: Key Stakeholder Consultations

During the course of the feasibility study research, consultations were held with the following key stakeholder groups:

Ministry of Environment – Corporate Services Division, Fire Management and Forest Protection Branch

- Education and Prevention
    - Training Coordinator
    - Program Support
    - Safety Manager
    - Training Officer
    - Fuels Engineering Specialist
    - Provincial Training Officer
- Fire Management
    - Director of Fire Management
    - Finance and Administration Coordinator
    - Fire Base Administration Supervisor
    - Fire Base Administrator
    - Fire Base Clerk
    - Fire Base Supervisor
    - Fire Center Administration Supervisor
    - Fire Center Coordinator
    - Fire Center Duty Officer
    - Fire Center Duty Officer Assistant
    - Fire Clerk
    - Fire Coordinator
    - Forest Protection Officer
    - Logistics Technician
    - Operations Clerk
    - Operations Manager
    - Preparedness Coordinator
    - Provincial Duty Officer
    - Senior Fire Manager
    - Technology Transfer Specialist
- Logistics and Radio Technical Services
    - Inventory Supervisor
    - Logistics Program Support
    - Logistics Technician
    - Manager Logistic and Technical Services
    - Unit Supervisor
    - Purchaser
- Aviation Operations
    - Business and Administration Manager

    - Chief Air Attack Officer
    - Chief Maintenance Engineer
    - Chief Pilot
    - Director of Northern Air Operations
    - Aviation Contract Coordinator and Aviation Safety Coordinator
    - Flight Watch Coordinator
    - Quality Assurance Manager
    - Safety Officer
- Quality Control and Administration
    - Project Manager (capital projects)
    - Supervisor Contract Administration
    - Quality Control Information Clerk
- Science and Planning
    - Fire Investigation Specialist
    - Fire Policy Analyst
    - Fire Science Modeler
    - Fire Weather Forecaster
    - GIS Analyst
    - Manager of Science and Planning
    - Operational Forest Protection Analyst
    - Science Specialist
    - Senior Meteorologist

Ministry of Environment – Forest Service Branch

- Manager Forest Practices
- Manager Forest Field Operations and Silviculture Unit
- Manager Forest Inventory and Resource Analysis Unit
- Forest Management Audit Expert

Ministry of Environment – Lands Branch

- Senior Lands Administrator

Ministry Tourism, Parks, Culture and Sport – Parks Service Branch

- Ecosystem Conservation Project Manager

Ministry of Environment – Finance and Administration Branch, Financial and Property Management Section, Northern Support Services

- Financial Manager
- Team Leader
- Financial Analyst
- Team Lead, Large Fires
- Manager Northern Support Services

Ministry of Environment – Conservation Division, Compliance and Field Services Branch, Enforcement and Investigations Section

- Conservation Officer
- Fire Investigation Specialist

Ministry of Environment – Communications Branch

- Communications Consultant

Public Service Commission

- Manager Occupational Health and Safety Risk
- Employee Administrator

Ministry of Corrections, Public Safety and Policing – Protection and Emergency Services / SaskEMO / Sask911

- Emergency Management Advisor

Ministry of Highways

- Executive Director Northern Region

Saskatchewan First Nations

- Contract Manager and Education Director from PAGC

Appendix B: Extra-Jurisdictional Research

During the course of the feasibility study research was conducted with other jurisdictions to identify potential solution options, best practices and lessons learned towards fire program information management. The following entities were contacted and in person discussions were held to gather information about their systems, processes, support and strategy.

Alberta Sustainable Resource and Development

- Provincial headquarters – Edmonton, Alberta
- Lac La Biche Fire Center – Lac La Biche, Alberta

BC Forest Service

- Provincial headquarters – Victoria, British Columbia
- Coastal Fire Region Fire Center – Parksville, British Columbia

Ontario Ministry of Natural Resources

- Western Regional headquarters – Dryden, Ontario

New Brunswick Department of Natural Resources

- Phone interview – Sandy McKinnon

Prince Albert National Park

- Park headquarters – Waskesui, Saskatchewan

Saskatoon Fire Services

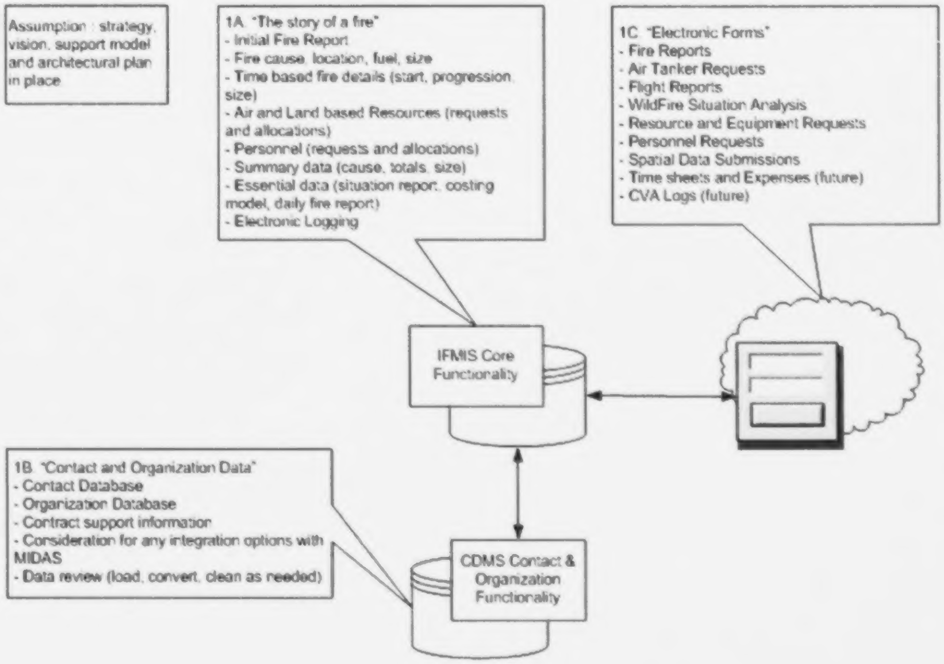
- Saskatoon Fire Headquarters – Saskatoon, Saskatchewan

Appendix C: Phased Approach Diagrams

A three phased approach to address the current situation is discussed in section 7. The following diagrams supplement this approach.

Figure C.1

Drawing Name:	Phase 1 - IFMIS Core & Contact / Organization	**Location:**	FMFPB



Assumption : strategy, vision, support model and architectural plan in place

1A. "The story of a fire"
- Initial Fire Report
- Fire cause, location, fuel, size
- Time based fire details (start, progression, size)
- Air and Land based Resources (requests and allocations)
- Personnel (requests and allocations)
- Summary data (cause, totals, size)
- Essential data (situation report, costing model, daily fire report)
- Electronic Logging

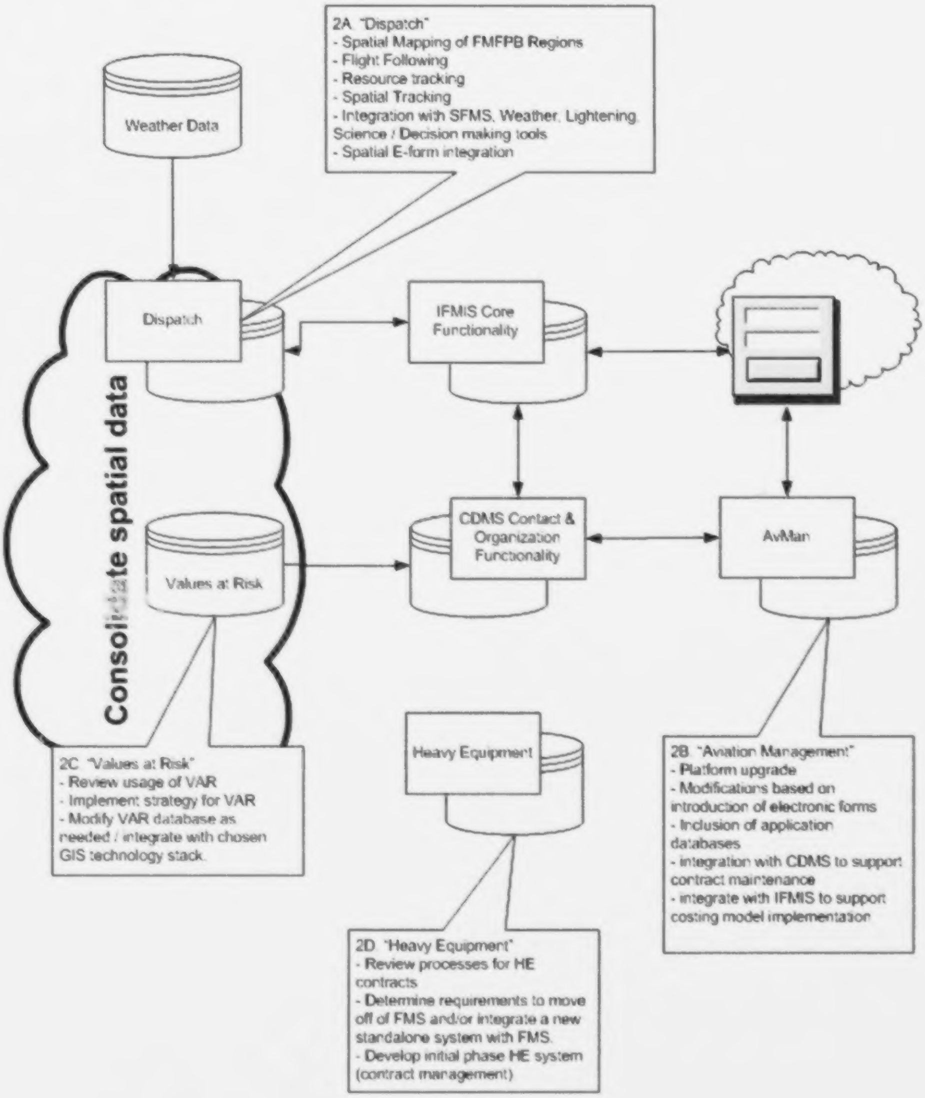
1B. "Contact and Organization Data"
- Contact Database
- Organization Database
- Contract support information
- Consideration for any integration options with MIDAS
- Data review (load, convert, clean as needed)

1C. "Electronic Forms"
- Fire Reports
- Air Tanker Requests
- Flight Reports
- WildFire Situation Analysis
- Resource and Equipment Requests
- Personnel Requests
- Spatial Data Submissions
- Time sheets and Expenses (future)
- CVA Logs (future)

Author:	Mark Dick	**Date:**	August 12, 2009	**Revision:**	01

Figure C.2

Drawing Name: Phase 2 – Dispatch, VAR, AvMan, Heavy Equipment **Location:** FMFPB


Weather Data
Dispatch
Consolidate spatial data
Values at Risk
IFMIS Core Functionality
CDMS Contact & Organization Functionality
AvMan
Heavy Equipment

2A. "Dispatch"
- Spatial Mapping of FMFPB Regions
- Flight Following
- Resource tracking
- Spatial Tracking
- Integration with SFMS, Weather, Lightening, Science / Decision making tools
- Spatial E-form integration

2C. "Values at Risk"
- Review usage of VAR
- Implement strategy for VAR
- Modify VAR database as needed / integrate with chosen GIS technology stack.

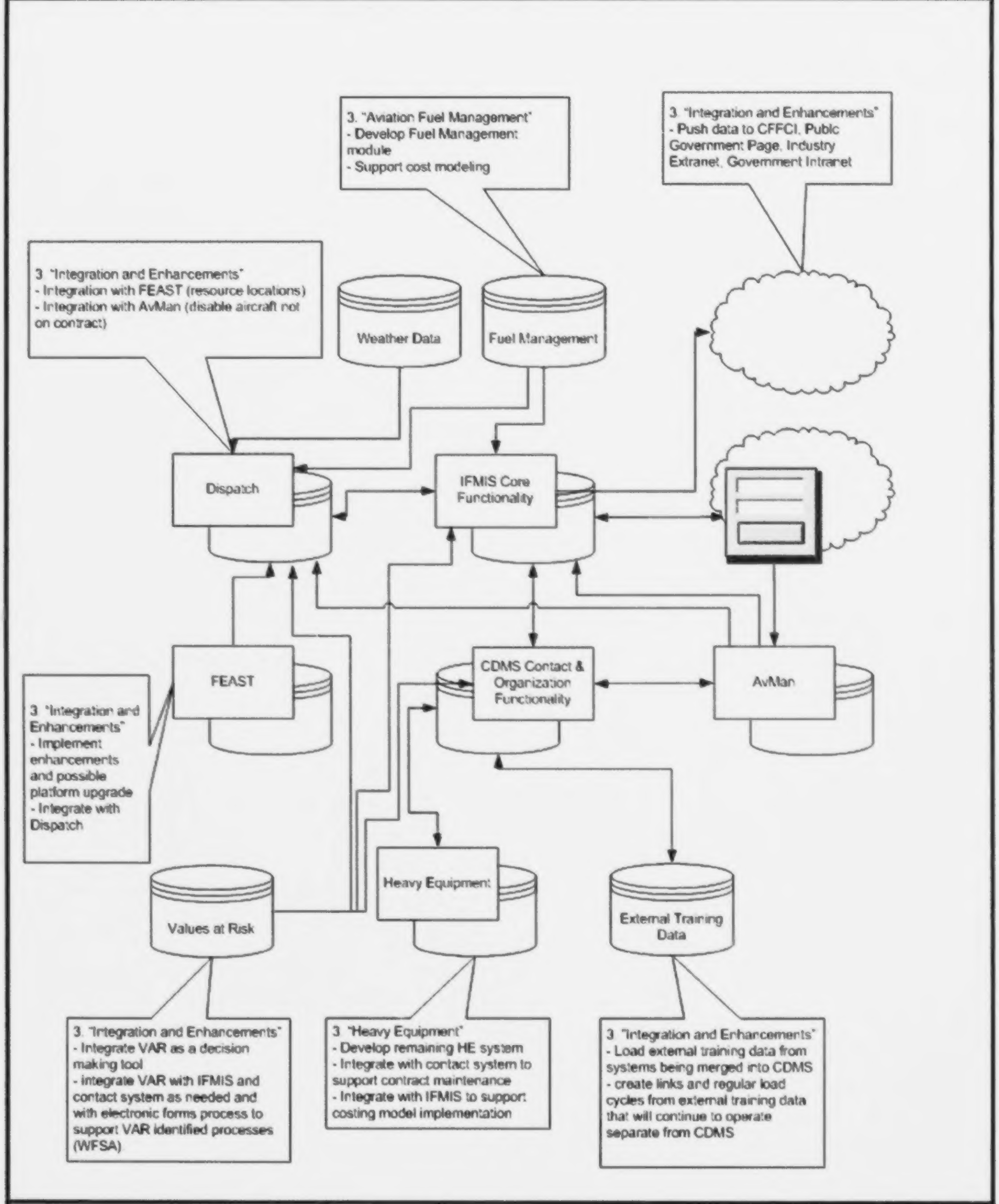
2B. "Aviation Management"
- Platform upgrade
- Modifications based on introduction of electronic forms
- Inclusion of application databases
- integration with CDMS to support contract maintenance
- integrate with IFMIS to support costing model implementation

2D. "Heavy Equipment"
- Review processes for HE contracts
- Determine requirements to move off of FMS and/or integrate a new standalone system with FMS.
- Develop initial phase HE system (contract management)

Author: Mark Dick **Date:** August 12, 2009 **Revision:** 01

Figure C.3

Drawing Name:	Phase 3 – Enhancements and Integration	**Location:**	FMFPB


Weather Data
Fuel Management
Dispatch
IFMIS Core Functionality
FEAST
CDMS Contact & Organization Functionality
AvMan
Values at Risk
Heavy Equipment
External Training Data

3. "Aviation Fuel Management"
- Develop Fuel Management module
- Support cost modeling

3. "Integration and Enhancements"
- Push data to CFFCI, Publc Government Page, Industry Extranet, Government Intranet

3. "Integration and Enhancements"
- Integration with FEAST (resource locations)
- Integration with AvMan (disable aircraft not on contract)

3. "Integration and Enhancements"
- Implement enhancements and possible platform upgrade
- Integrate with Dispatch

3. "Integration and Enhancements"
- Integrate VAR as a decision making tool
- integrate VAR with IFMIS and contact system as needed and with electronic forms process to support VAR identified processes (WFSA)

3. "Heavy Equipment"
- Develop remaining HE system
- Integrate with contact system to support contract maintenance
- Integrate with IFMIS to support costing model implementation

3. "Integration and Enhancements"
- Load external training data from systems being merged into CDMS
- create links and regular load cycles from external training data that will continue to operate separate from CDMS

Author:	Mark Dick	**Date:**	August 12, 2009	**Revision:**	01

Appendix D: Customer Comments

During the course of the feasibility study, many comments and suggestions were received from various staff within the FMFPB, representatives from other branches and ministries, and staff from other provincial fire programs. The following short list of comments is a random sample of interview comments from these groups.

- "I spend 3 to 5 hours a day during fire season, just processing emails."
- "Our dispatcher does a lot of our administration. I would be spending 25% of my time doing it if it wasn't for her."
- "Our ITO resource is located in Meadow Lake and serves the whole FMFPB west side as well as all of the other provincial government offices."
- "ENVIRONET needs work. It is unreliable so we use the public web site more (in context of finding government staff information)."
- "We wanted to change DFFIS, but we were told it was to tender to change...it might break."
- "The system (FMS) does not carry forward information from last year. I have to re-key it all every spring."

Appendix E: External and Associated Agency and Industry Survey

A simple survey was sent out to those groups and agencies who have contact with the FMFPB either in sending or receiving information. The following is a list of recipients and a summary of responses.

Recipients

- Forest Engineering Research Institute of Canada (FERIC)
- Canadian Forest Service (CFS) – no response.
- Community Planning
- Domtar
- Ministry of Health
- Ministry of Social Services
- Mistik – no response
- Saskatchewan Forest Center / Forest First – ceased operations
- SaskPower – no response
- Canadian Interagency Forest Fire Center (CIFFC)

Questions and Intent

In a survey, recipients were asked the following information management related questions in an attempt to determine their connectivity and reliance on FMFPB and any reliance's that FMFPB had on them. In addition, any wants, requests and value add items were also requested.

- At what levels within your organization is there interaction with FMFPB?
- What information, if any, does your organization currently receive from FMFPB?
- If you currently receive information from FMFPB, is it available and useful to you?
- If you do not currently receive information from FMFPB, is there information you would like to receive and how would you like to receive it?
- What information, if any, does your organization currently provide to FMFPB?
- If you currently send information to FMFPB, are there anticipated or existing alternative methods available for sending this information?

Summary

A summary of the results, compiled by category, are listed below.

Information Category	Organization	Use/Supply	Use/Supply of Information	Use/Supply Details	Format and Delivery	Issues
Education and Planning	Municipal Affairs - community planning	Use	Regulatory requirement for planning purposes - approvals.	Comments on subdivision design.	Unknown	
Education and Planning	Municipal Affairs - community planning	Supply	Regulatory requirement for planning purposes - approvals.	Application forms for this exercise. Lands Branch has requested these forms go through FMFP.	Unknown	By putting the process through FMFP, the process is slowed down.
Education and Planning	PA National Park	Use/Supply	Share information related to the Fire Smart program.		Meetings, Verbal	
Emergency data	CIFFC	Use	They are looking to gather more and better real time data as they upgrade their own system.		Electronic - to be determined.	
Emergency data	Social Services	Use	Emergency related.	Potential threats to communities, smoke warnings, containment of fire.	SERM Website, operational briefings during events, conference calls.	Would like to see base situation report information sent ASAP in evacuation situation. Email preferred.
Emergency data	Social Services	Supply	Evacuation related information.	Number of evacuee's, status of evacuation.	Email, phone, fax.	
Financial	Prince Albert Grand Counsel	Use/Supply	Timesheets are processed through PAGC and paid via NSS.	Timesheet details.	Paper.	
GIS	Communications Branch	Use	Map data specific to an event.	Burn areas; general area maps.	Via GIS staff.	
GIS	Department of Highways	Supply	Have supplied aerial photography data in		Digital	

			the past.			
GIS	Domtar	Use	Mapping data	On "out" fires, FMFP supplies maps to Domtar so they can update their FMA maps.	Digital	
GIS	Domtar	Use	After fire season, they download fire boundaries.	Use them in their own GIS system.	Digital via FTP.	
GIS	Forestry	Use/Supply	Satellite imagery.	Both departments purchase the same imagery.	Digital	
Operational data	CIFFC	Use	Daily situation report.	Fire causes, weather, prescribed fire data, FWI, preparedness, fire predictions, fire status, helicopter hires, national resources required, national resources received, national resources returned, resource availability to other jurisdictions.	Via a web page.	
Operational data	Communications Branch	Use	Data from the operational site to allow communication with the public.	Media page data - fire statistics by region; personel fighting the fires.	FMFP website	
Operational data	Domtar	Use	Daily operational data	Current active fire status	Web site; phone contacts.	
Operational data	Domtar	Supply	Fire protection suppression plan prepared yearly by Domtar		Report.	
Operational data	Emergency Services	Use	Situation report.	Fire causes, weather, FWI, preparedness, fire predictions, fire	Paper via meetings.	

				status.		
Operational data	FERIC	Use	Operational information.	Fire detection, air operations and fire operations. IE. When doing communication project, they would like real-time access to fire danger rating and fire data during summer.	Would like to get it via spreadsheet, database, XML or flat text file.	
Operational data	FERIC	Use AB Data	Alberta data currently being accessed by Feric.	Fire databases; fire web; resource tracking.	VPN and web services.	
Operational data	FERIC	Use	Based on past experience in projects, access to a variety of things is helpful for doing projects.	Fire lookout information; detection messages; fire operations; fire crew dispatch; aerial resource dispatch; weather; personal contact info; road access		
Operational data	Forestry Branch	Use	Helicopter contracts	Utilize FMFP helicopter contracts to hire for forestry operations.	Verbal	
Operational data	Forestry Branch	Supply	Road data, trail data.	A growing project within Forestry. Could be available to Fire digitally.		
Operational data	Forestry Branch	Use	Burn areas.	Burn areas for salvage practices, reforestation.	SERM Website, operational briefings during events, spring preparation meetings.	

Operational data	PA National Park	Use/Supply	MOU on fire burn area.		Determined by MOU.	
Operational data	Parks Branch	Supply	Prescribed burn areas.		Paper	
Operational data	Parks Branch	Supply	Park area that is allowed to burn.	Parks has areas that could be allowed to burn if a fire came through. They could supply this to FMFP for their operational use.		
Operational data	Parks Branch	Use	Fire ban information.	Rely on FMFP to set fire bans for them based in indices. This is requested by Parks.	Verbal/e-mail	
Other	CIFFC	Use	Data and reports prepared for use by Working Groups and Community of Practices group.	Content specific.	Sent reports	
Other	Communications Branch	Supply	External inquiry information.	Inquiries from Media, insurance companies, community.		
Policy	Forestry Branch	Use/Supply	Collaborate on information between Forestry and Fire for collaboration of policy formation.	Forestry standards, fuel storage, legal guidelines, forest management	Meetings, Verbal	
Scientific	CIFFC	Use	Topic specific.	Science and Technology Community of Practices.	Sent reports.	
Scientific	CIFFC	Supply	Topic specific.	Science and Technology Community of Practices.	Sent reports.	
Scientific	FERIC	Use	Fuel break information.	Fuel break information.	Would like to get it via spreadsheet, database, XML or	

					flat text file.	
Scientific	FERIC	Supply	Research findings.	Research findings.	Via web site - fire.feric.ca	
Statistical data	Canadian Forest Service	Use	Burn data and statistical data.	Data is given to forestry and then it is sent to CFS	Report.	
Statistical data	CIFFC	Use	Annual report	Yearly statistics used to report to Council of Directors. Fire and Hectare data by zone. Budget information for suppression costs and values lost cost.	Sent report.	
Statistical data	CIFFC	Supply	CIFFC national information for fires, hectares, expenditures.	CIFFC national information for fires, hectares, expenditures.		
Statistical data	Forestry Branch	Use	DFFIS / NR22 / Daily's data.	Details to support yearly state of the forest report. Summaries by area / license areas.	Verbal request - report.	
Statistical data	Ministry of Health	Use	Use active fire data, location of fires, etc. Compare against health assets and impacted communities (smoke threat).	Fire data (number of active fires), fire locations.	SERM Website, operational briefings during events, spring preparation meetings.	
Statistical data	Ministry of Health	Use	Inform the minister of activities.	Fire data (number of active fires), fire locations.	SERM Website, operational briefings during events, spring preparation meetings.	

Statistical data	Ministry of Health	Use	Fire location in reference to protected / full response zones.	Zone information.	SERM Website, operational briefings during events, spring preparation meetings.	
Statistical data	Social Services	Use	Number of fires, locations.	Number of fires, locations.	SERM Website, operational briefings during events, conference calls.	Sometimes, the usual briefings and conference calls are not fast enough.
Training	Forestry Branch	Use/Supply	Training sessions.	Overlap in training means that forestry staff can fill up FMFP sessions and vice versa. OH&S, safety, fire.	Verbal	
Training	Prince Albert Grand Counsel	Supply	Under contract, PAGC provides fire fighting services to fire program. To do this, they need to have people in CDMS.	CDMS training details.	Supply training details.	
Training	Prince Albert Grand Counsel	Use	Under contract, PAGC provides fire fighting services to fire program. To do this, they need to have people in CDMS.	CDMS training details.	Reference CDMS application to check training history.	
Training	Prince Albert Grand Counsel	Supply	Under contract, PAGC provides training to FMFP.	Delivers Fire curriculum.	Sessions.	

Training	Parks Branch	Use/Supply	Training sessions.	Overlap in training means that parks staff can fill up FMFP sessions and vice versa (fire and safety training). Parks would like to participate in some of the fire specific training that FMFP has access to - south of the border.	Verbal/e-mail	
Training	Parks Branch	Supply	Training details.	For Parks staff to help FMFP fight fires (to support the MOU, prescribed burns, etc), they need to be in CDMS.		
VAR	Forestry Branch	Supply	Timber rating system.	Timber value data.	Digital	
VAR	Forestry Branch	Use	Burn areas.	Burn areas.	Digital	
VAR	Forestry Branch	Supply	Plantation data.	Plantations are a high value item for Forestry. They feel it should rank higher than other values at risk (like timber values).	Digital	
VAR	Forest Industry	Supply	Inventory data as supplied by industry.	Harvest info is given to Forestry but doesn't make it to Fire.		
VAR	Ministry of Health	Supply	They would be able to supply population demographics and numbers, health assets, etc. into the VAR database.			
VAR	PA National Park	Supply	Park values.	Vegatation types, structures.	Digital	

Weather	Department of Highways	Use	Would like access to weather data.	Precipitation useful for planning work on a daily basis.	Website	
Weather	Forestry Branch	Use	Weather data of all sorts would be helpful to Foresty.	Historical to compare to forestry events, for prescribed burns, etc.	FMFP website (via Spot Weather requests). SERM website.	
Weather	Ministry of Health	Use	Weather to supplement health issue and evacuation planning.	Wind direction, RH, precipitation, lightening strikes.	SERM Website, operational briefings during events, spring preparation meetings.	
Weather	PA National Park	Use	Weather data from weather stations.	They collect this using Autocaller directly.	Digital	
Weather	PA National Park	Use	Spot weather forecasts for prescribed burns.	Contact Daniel.	Report.	
Weather	Parks Branch	Use	Would like better access to weather.	Historical for use in past prescribed burns. Current for tourist warnings are Parks. Current for herbicide application planning.	Currently receive chunks via verbal request. Would like web/digital access.	
Weather	Social Services	Use	Predictions and forecasts.	Humidity / dryness, wind, rain, spread of fire.	SERM Website, operational briefings during events, conference calls.	

Appendix F: Glossary of Terms and Acronyms used by the FMFPB

AAO – *Air Attack Officer*
ACAN- *Advanced Contract Award Notice*
ACTC- *Agency Chiefs Tribal Council*
ADM – *Assistant Deputy Minister*
AEEL – *Advanced Education, Employment and Labour (Ministry)*
AHJ- *Agency Having Jurisdiction (US)*
AID – *Aerial Ignition Device*
AIS – *Aerial Ignition Supervisor*
AOBD- *Air Operations Branch Director*
AREP- *Agency Representative*
ARS – *Aboriginal RelationShip Officer*
ASGS – *Air Support Group Supervisor*
ATGS – *Air Tactical Group Supervisor*
AVMAN- *Aviation Management System*
BCGM – *Base Camp Manager*
BLM- *Bureau of Land Management (US)*
BMO- *Bank of Montreal Corporate Purchasing MasterCard*
BNFC- *Buffalo Narrow Fire Center*
BPZ – *Burning Permit Zone*
BUI- *Build Up Index*
CAMSP- *Company Aviation Management Safety Program*
CANUTEC- *Canadian Transport Emergency Center*
CAR – *Canadian Aviation Regulation*
CASARA – *Civil Air Search and Rescue Association*
CBA- *Collective Bargaining Agreement*
CDI – *Cabinet Decision Item*
CDMS- *Career Development Management System*
CFB- *Crown Fraction Burned*
CFFDRS- *Canadian Forest Fire Danger Rating System*
CFFWIS- *Canadian Forest Fire Weather Information System*
CFS- *Canadian Forest Service -or- Compliance and Field Services*
CIFFC- *Canadian Interagency Forest Fire Center*
CMSY – *Commissary Manager*
CO – *Conservation Officer*
COA – *Chart Of Accounts*
COMET- *Cooperative Program for Operational Meteorology, Education, and Training operates in Boulder, Colorado, under the University Corporation for Atmospheric Research (UCAR).*
COML – *Communication Unit Leader*
COMP – *Compensation/Claims Unit Leader*
COST – *Cost Unit Leader*
CRWL – *Crew Leader*
CRWM – *Crew Member*

CSA- *Canadian Standards Association*
CVA- *Central Vehicle Agency*
CWPP- *Community Wildfire Protection Program*
DC- *Drought Code*
DFFIS- *Daily Forest Fire Information System*
DIAND – *Department of Indian Affairs and Northern Development*
DIFFIR – *Daily Forest Fire Information Report*
DIFFIRY2D - *Daily Forest Fire Information Report Year to Date*
DIP – *Disability Income Plan (Out-of-scope Employees)*
DIVS – *Division Supervisor*
DMC- *Duff Moisture Code*
DMOB – *Demobilization Unit Leader*
DMT – *Deviation for normal Mean Temperature*
DOCL – *Documentation Unit Leader*
DSA – *Delegated Signing Authority*
EDO – *Earned Day Off – for in scope employees*
EFAP – *Employee and Family Assistance program*
EFF- *Emergency Fire Fighter*
EFP- *Emergency Fire Personnel*
EMC – *Equilibrium Moisture Content*
EMT – *Emergency Medical Technician*
EPO- *Environmental Project Officer*
EPS – *Education, Prevention and Safety*
EQTR – *Equipment Time Recorder*
ERAP- *Emergency Response Assistance Plan*
ETA – *Estimated Time of Arrival*
FAA- *Federal Aviation Administration (US)*
FACL – *Facilities Unit Leader*
FAM- *Financial Administration Manual*
FASC- *Finance and Administrative Section Chief*
FBAN- *Fire Behavior Analyst*
FBP- *Fire Behaviour Prediction (system)*
FBS – *Fire Base Supervisor*
FCC – *Fire Centre Coordinator*
FCDO- *Fire Center Duty Officer*
FDUL – *Food Unit Leader*
FEAST- *Fire Equipment And Supplies Tracking*
FEMA- *Federal Emergency Management Agency (US)*
FEMR – *Fire Equipment Manager*
FFFIR – *Final Forest Fire Information Report*
FFK – *Fire Fighting Kit*
FFMC- *Fine Fuel Moisture Code*
FIO- *Fire Intelligence Officer*
FIPPA – *Freedom of Information and Protection of Privacy Act*
FMFP- *Fire Management and Forest Protection*
FMS- *Financial Management System*
FN – *First Nations*

FOPS – *Falling Objects Protective Structure*
FPA- *Forest Protection Area*
FPW – *Fire Protection Worker*
FRZ – *Full Response Zone*
FWCO – *Fixed Wing Coordinator*
FWI- *Fire Weather Index*
GIS- *Geographic Information System*
GISP – *Ground Ignition Specialist*
GSUL – *Ground Support Unit Leader*
HEBD – *Heavy Equipment Branch Director*
HEBM – *Heli Base Manager*
HEGS – *Heavy Equipment Group Supervisor*
HELO – *Heavy Equipment Line Locator*
HFI- *Head Fire Intensity Index*
HLCO – *Helicopter Coordinator*
HPC - *Harassment Prevention Coordinator*
HR – *Human Resources*
HRC- *Human Resource Consultant*
HTMM – *Heli Torch Mix Master*
IA – *Initial Attack*
IC- *Incident Commander*
ICP- *Incident Command Post*
ICRG – *Incident Command Response Group*
ICS- *Incident Command System*
ICT- *Incident Command Team*
IDW- *Inverse Distance Weighted (algorithym)*
IFAAR – *Initial Fire Advisory and Assessment Report*
IMS – *Information Management System*
IMT- *Incident Management Team*
INAC – *Indian and Northern Affairs Canada*
IPP- *Individual Performance Plan (Out of Scope)*
ISI- *Initial Spread Index*
ITO- *Information Technology Office*
JAF – *Job Allocation Form*
KSA – *Knowledge, Skills and Abilities*
LACES – *Lookouts, Anchor points, Communications, Escape routes, Safety zones*
LCMG – *Line Camp Manager*
LOAD – *Load Master*
LOFR – *Liaison Officer*
LOU – *Letter Of Understanding*
LRFC- *La Ronge Fire Center*
LSC – *Logistics Section Chief*
LTD – *Long Term Disability*
MAC – *Mobile Asset Coordinator*
MAPT – *Mapping Technician*
MARS- *Canadian Interagency Mutual Aid Resource Sharing Agreement*
MEDL – *Medical Unit Leader*

MIDAS- *Multi Informational Database Application System*
MLTC – *Meadow Lake Tribal Council*
MODIS- *Moderate Resolution Imaging Spectroradiometer*
MOU – *Memorandum of Understanding*
MRZ – *Modified Response Zone*
NAO- *Northern Air Operations*
NDA – *Northern District Allowance*
NFPA- *National Fire Protection Association (US)*
NIOSH - *National Institute for Occupational Health and Safety (U.S.)*
NSS- *Northern Support Services*
NWCG- *National Wildfire Coordinating Group (US)*
OBZ – *Observation Zone*
OHC – *Occupational Health Committee*
OHO – *Occupational Health Officer*
OH&S – *Occupational Health and Safety*
OPBD – *Operations Branch Director*
ORDM – *Ordering Manager*
OSC – *Operations Section Chief*
OT – *Over Time*
PAFC- *Prince Albert Fire Centre*
PAGC- *Prince Albert Grand Council*
PAL – *Possession Acquisition License*
PANP – *Prince Albert National Park*
PAR-Q- *Physical Activities Readiness Questionnaire*
PDO- *Provincial Duty Officer*
PEBA – *Public Employees Benefit Agency*
PEGASUS – *see definition for Prometheus*
PESP – *Public Employees' Superannuation Plan*
PFCM- *Provincial Fire Centre Manager*
PLAR- *Prior Learning Recognition and Assessment*
PME – *Powered Mobil Equipment*
PNP – *Percentage of Normal Precipitation*
POC- *Probability of Containment*
PPE – *Personal Protective Equipment*
PPP- *Daily Provincial Preparedness Plan*
PROC – *Procurement Unit Leader*
Prometheus- *A deterministic fire growth simulation model. It uses spatial fire behaviour input data on topography (slope, aspect and elevation), FBP fuel types, weather stream and FBP fuel type lookup table files. Alberta Sustainable Development is lead.*
PSC- *Public Service Commission*
PSC – *Plans Section Chief*
PUCK- *Preparedness Utilization Coverage Calculator (helicopters)*
PWFC – *Provincial Wildland Fire Coordinator*
RADO – *Radio Operator*
RCDM – *Receiving and Distribution Manager*
RESL – *Resource Unit Leader*
ROPS – *RollOver Protective Structure*

ROS- *Rate of Spread*
R&R – *Rest and Rejuvenation*
RTS- *Radio Technical Services*
S-4 – *Claim form used as a statement of travel expenses incurred by an employee conducting government business*
SAR – *Search and Rescue Coordinator*
SCLD – *Sector Leader*
SCBA- *Self Contained Breathing Apparatus*
SCWRAP- *Saskatchewan Community Wildfire Risk Assessment Project*
SDO – *Scheduled Day Off – this is for out-of-scope employees*
SEAT- *Single Engine Air Tanker*
SFC – *Saskatchewan Forest Centre*
SFM- *Senior Fire Manager*
SFMS- *Spatial Fire Management System*
SGEU- *Saskatchewan Government and General Employees Union*
SGI – *Saskatchewan Government Insurance*
SITL – *Situation Unit Leader*
SITREP – *Situation Report*
SOF – *Safety Officer*
SOP – *Standard Operating Procedure*
SPM- *Saskatchewan Property Management*
SPUL – *Supply Unit Leader*
STAM – *Staging Area Manager*
STDZ – *Heavy Equipment Strike Team Leader*
STLD – *Strike Team Leader*
SUBD – *Support Branch Director*
SVBD – *Service Branch Director*
SWP- *Safe Work Procedures*
TAHD – *Temporary Assignment of Higher Duties*
TCAS – *Traffic Collision Avoidance System*
TDG – *Transportation of Dangerous Goods*
TFLD – *Task Force Leader*
TIL – *Time in Lieu*
TIME – *Time Unit Leader*
TPCS – *Tourism, Parks, Culture and Sport (Ministry)*
UCAR- *University Corporation for Atmospheric Research*
UHF – *Ultra High Frequency*
UMC- *Union Management Committee*
USFA- *United States Fire Administration*
VAR – *Values At Risk*
VHF – *Very High Frequency*
VP – *Values Protection*
VPU – *Values Protection Unit*
WCB – *Workers Compensation Board*
WFSA- *Wildland Fire Situational Analysis*
WIPP- *Wildfire Ignition Probability Prediction*
WHMIS – *Workplace Hazardous Material Information Sheets*